




St. George's

1857









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## RECOMMENDATIONS.

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THE object of this work is to assist Grocers, Distillers, and all other dealers, in making Wines, Spirituous Liquors, &c. from the produce of our own country, and thereby enable us, in time, to become independent of other countries.

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*Columbia College, N. York, Feb. 28, 1829.*

At the request of Mr. William Beastall, I have perused a work compiled by him, entitled "A Useful Guide for Grocers, &c. I have found it to contain many useful receipts, particularly for persons engaged in the several branches of business to which it is adapted. That part of it, however, which has struck me as peculiarly valuable, is where he shows the manner in which Wines may be made from materials growing abundantly in this country.

Should these receipts come into extensive use, they would have the effect of rendering in a great degree useless another class which this work contains; namely, those which treat of the rectification and flavouring of alcoholic liquors.

JAS. RENWICK.

TO MR. WM. BEASTALL, *Chemist.*

*New-York, Feb. 16, 1829.*

SIR,—According to your request, I return an answer to your letter of the 14th inst. accompanying the book just published under the title of “A Useful Guide for Grocers, Distillers, Hotel and Tavern Keepers, and Wine and Spirit Dealers of every denomination.” &c.

From an early stage of society, man seems to have determined not to be a mere water drinker; on the contrary, much of his industry and skill has been employed in preparing other articles for potation. This has been carried so far, that a modern observer once said *hydrophobia*, or the *dread of water*, was the wide spread and dominant epidemic. Your book affords ample confirmation of this remark; for your information concerning Wines, Ciders, Perries, Malt Liquors, Brandy, Rums, Gins, Liqueurs, and Cordials, is a body of curious evidence how far the different branches of this business has been carried.

It is an important subject of contemplation to the moral observer, as well as to the political economist, and the medical adviser.

It is really surprising to what extent the preparation of the different fluids for human potation has prevailed. Your disclosure of many frauds and imitations is enough to make your readers pause and stare ; and yet the greater part of the consumers know little or nothing of the pernicious manufacture.

I think you have compiled an excellent and instructive work, for the general reader, as well as for the classes to whom it is more particularly addressed. It is worthy of being perused by all persons who deal in or meddle with, in any way, the compositions whose history you have sketched. It really behoves us to be better acquainted with substances taken into our stomachs.

Your directions on *Meats* are worthy of attention, no less than those on *drinks*. For example, *Vinegar*, and its application to pickling ; *Sugar*, and its use in syrups and preserves ; *Salt*, and its employment in keeping animal substances ; with abundance more of valuable materials, fill up the rest of your pages.

But, it is time for me to stop, since I am not writing a review, but only a polite ac-

knowledgment. Accept my thanks for the information you have given me, and with them, the assurance of my respect.

SAMUEL L. MITCHELL.

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MR. WILLIAM BEASTALL,

SIR—I have perused your “Useful Guide,” &c. with a considerable degree of interest, and must say, that it is not only a book deserving the attention of Grocers, Distillers, and Tavern-keepers, but of every one who has at heart the interest and well being of the human race. Such a work has long been wanting, and if properly studied, might be the means of preventing a thousand articles which are highly pernicious, from being palmed on the unwary.

The receipts for curing and preserving meats and vegetables, are really valuable to housekeepers as well as Grocers.

With every wish for the successful result of your praiseworthy labours,

I remain, Dear Sir,

Yours,

THOS. COCHRAN.





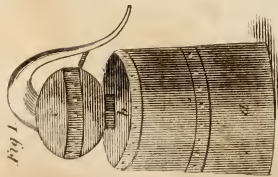


Fig 1.

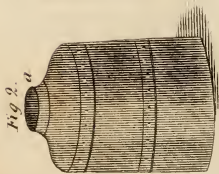


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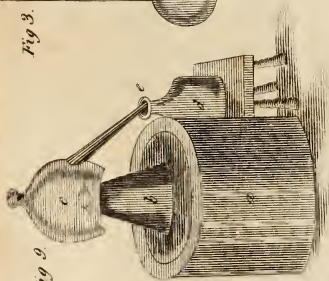


Fig 3.



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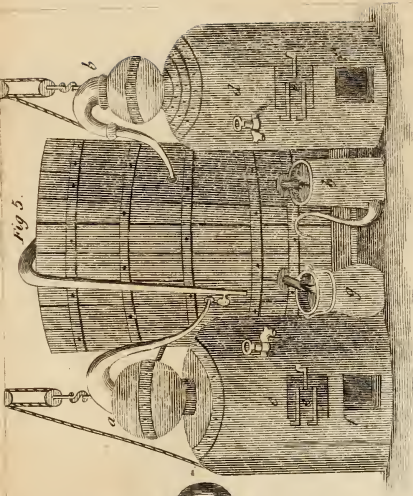


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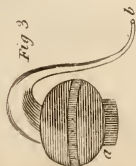


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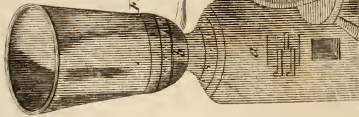


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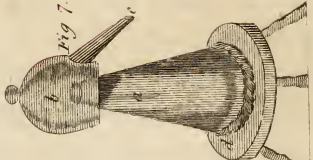


Fig 8.

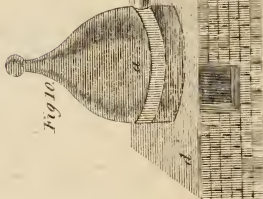


Fig 9.



Fig 10.

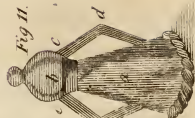


Fig 11.



THE  
GROCER AND DISTILLER'S  
**USEFUL GUIDE,**  
BEING A COMPLETE DIRECTORY  
FOR MAKING AND MANAGING ALL KINDS OF  
WINES AND SPIRITUOUS LIQUORS;  
ALSO,  
*For Preserving Beef, Pork, and Fish;*  
FOR MAKING THE BEST PICKLES AND PRESERVES;  
AND  
FOR PRESERVING FRUITS & VEGETABLES  
FRESH AND GOOD THROUGHOUT THE YEAR.  
TOGETHER  
WITH A COMPLETE SYSTEM OF  
**DISTILLATION.**

- I. The Method of performing the various processes of Distillation, with a Description of the Instruments; the whole Doctrine of Fermentation; the manner of drawing Spirits from Malt, Raisins, Molasses, Sugar, &c.
- II. On Rectification; containing the best and most approved Methods of Rectifying Spirits, Alcohol, &c.
- III. The Manner of Distilling Simple Waters from Plants, Flowers, &c.
- IV. The Method of making Compound Waters, Rich Cordials, both French and English.

THE WHOLE DELIVERED IN THE PLAINEST MANNER,  
FOR THE USE BOTH OF  
DISTILLERS AND PRIVATE FAMILIES.  
ILLUSTRATED WITH A PLATE.

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**SECOND EDITION,**  
WITH CONSIDERABLE ADDITIONS.

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BY WILLIAM BEASTALL, CHEMIST.

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NEW-YORK:  
PUBLISHED BY THE AUTHOR, 148 FULTON-ST.

1832.

[Entered according to the act of Congress, in the year 1831, by  
WM. BEASTALL, in the office of the Clerk of the Southern District  
of New-York.]

## PREFACE.

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This work on wines, spirits, &c. now presented to our readers, could not have been formed in any age but the present. The wisdom of this age has been to bring down science from her heights to the practical knowledge of every day concerns, and the number of its inventions and discoveries have kept pace with the increasing wants of man. It therefore requires but little reflection on the agricultural and commercial state of this country, to show the propriety of giving more attention to the manufacturing of domestic wines and spirits, than has hitherto been done. Liable as we are to interruptions in our commerce, with those countries from which we draw our supplies of wines and spirituous liquors; it would be prudent for us to endeavour to become less dependent on them; and more industrious in improving our own capacity to provide for ourselves. This country abounding as it does, with materials suitable for this purpose, most certain it is, that by a continued perseverance, in this laudable undertaking, wines and spirituous liquors could be made as good, and of as rich a flavour, in all respects, in this country, as any that are imported from abroad. With a consciousness of this convincing and important truth, this work it is hoped will be found, a valuable and acceptable assistant.

The author, at a very distant period, had amassed for his own private use, a large number of practical receipts, on the making and management of wine, spirits, &c. Intending at some future period, to commence the wine and spirit business himself; but having a number of other

concerns, which engage his whole attention, he has hitherto been obliged to decline it.

He was therefore induced to believe, that his stock of information on this subject, would be found according to its title; "A USEFUL GUIDE TO GROCERS, DISTILLERS, HOTEL AND TAVERN KEEPERS, AND ALL THOSE WHO DEAL IN WINES, SPIRITUOUS LIQUORS," &c. And with this belief he is inclined to hope, that the general usefulness of this work, will recommend it to the favour and indulgence of its readers, as he takes the liberty to assure them, that the very best and most approved receipts, which are at present in use on this subject, will be found in this volume. He has spared no pains or expense in collecting them during several years, while he has had those opportunities which but few have enjoyed. Having also the knowledge, that severe losses have been sustained in wines and spirits, for want of proper information on the subject, and proper methods of managing them; he therefore hopes the reader in this work, will find himself furnished with an ample supply.

In this work, the Grocer will find information sufficient to enable him to add an additional branch to his business, which, if judiciously managed, will be found of no small importance.

This valuable information will also be of much service to the Tavern-keeper. The distiller will be enriched with a valuable store, which will enable him to make important improvements in his spirituous liquors. And the Wine merchant will find ample instructions for managing, improving, and preserving his wines.

Many of these valuable receipts are original; some of them communications, and part of them copied from the best authors, and are known to me in consequence of some opportunities which seldom happen to any who are willing to impart to the public what they learn of this kind; a minute knowledge of such matters being almost wholly confined to those who are lucratively engaged in the business they relate to, and who, therefore, have very strong reasons against revealing them to the world.

# INDEX.

WINES.		Page
	Second,	57
	Third,	<i>ib.</i>
Portuguese Wines,	13 Fourth,	58
White Port and Lisbon,	15 Fifth,	<i>ib.</i>
French Wines,	<i>ib.</i> English Port,	59
Spanish Wines,	16 Imitation Port,	<i>ib.</i>
Italian Wines,	17 English Mountain,	60
German Wines,	<i>ib.</i> To make Imitation Sherry,	61
Madeira & Teneriffe Wines,	18 Another,	<i>ib.</i>
Cape Wines,	19 Imitation Madeira,	62
Experiments on Foreign	Another,	<i>ib.</i>
Wines, by Dr. Reese,	20 English Sack,	64
Artificial Wines,	23 Raisin Wine,	<i>ib.</i>
Sweet Wines,	24 Second,	<i>ib.</i>
Method of making Sweet	Third,	65
Wines,	<i>ib.</i> Fourth,	<i>ib.</i>
Dry, and Strong Wines, Ma-	Fifth,	66
deira, Sherry, &c.	27 Currant Wine,	<i>ib.</i>
Brisk and Sparkling Wines,	Second,	<i>ib.</i>
Champagne, &c.	30 Third,	67
Method of making Cham-	Fourth,	68
paigne, &c.	<i>ib.</i> Fifth,	<i>ib.</i>
On Sherry,	33 Sixth,	69
Madeira Wines,	35 Orange Wine,	<i>ib.</i>
Table by Mr. Brande, re-	Second,	70
presenting the quantity	Third,	71
of alcohol contained in	Gooseberry Wine,	<i>ib.</i>
different wines,	39 Pearl Gooseberry Wine,	72
Essential Oils and Flavour,	43 Second,	<i>ib.</i>
Remarks on Wines,	44 Third,	73
On the management of	Fourth,	<i>ib.</i>
Wines in the casks,	50 Fifth,	74
Cyprus Wine,	53 Cowslip Wine,	<i>ib.</i>
Artificial Mountain,	<i>ib.</i> Second,	75
English Claret,	54 Third,	<i>ib.</i>
To make Cheap and whole-	Parsnip Wine,	76
some Claret,	55 Turnip Wine,	<i>ib.</i>
Frontignac Wine,	<i>ib.</i> Rose Wine,	77
English Frontignac Wine,	<i>ib.</i> Elder Wine,	78
Another,	56 Second,	<i>ib.</i>
English Champagne,	<i>ib.</i> Third,	79

Fourth,	79	Third,	101
Fifth,	80	Spruce Wine,	<i>ib.</i>
Sixth,	<i>ib.</i>	Birch Wine,	102
Elder Flower Wine,	81	Another,	103
Second,	<i>ib.</i>	Lemon Wine,	<i>ib.</i>
White Mead Wine,	82	Another,	104
Red Mead Wine,	<i>ib.</i>	Clary Wine,	<i>ib.</i>
Another,	<i>ib.</i>	Another,	105
Damson Wine,	83	Juniperberry Wine,	<i>ib.</i>
Second,	<i>ib.</i>	Scurvy grass Wine,	<i>ib.</i>
Third,	84	Wine of English Grapes,	106
Apple White Wine,	<i>ib.</i>	Second,	108
Apple Wine,	<i>ib.</i>	Third,	<i>ib.</i>
Apple Red Wine,	85	On making Wines, by Jo-	
Cherry Wine,	<i>ib.</i>	seph Cooper, Esquire, of	
Morrello Cherry Wine,	86	New-Jersey,	109
Black Cherry Wine,	<i>ib.</i>	Cider Wine,	117
Strawberry, Raspberry, and		Second,	<i>ib.</i>
Cherry Wine, a different		Cider White Wine,	<i>ib.</i>
way.	<i>ib.</i>	Cider Red Wine,	118
Peach Wine,	87	To improve Vitiated Wines,	<i>ib.</i>
Peach and Apricot Wine,	<i>ib.</i>	To Restore Bri-ish Wines,	
Raspberry Wine,	88	that are Pricked,	119
Second,	<i>ib.</i>	To Restore Flat Wines,	<i>ib.</i>
Third,	89	A Second Method of taking	
Fourth,	<i>ib.</i>	off the Acid, or Restoring	
Quinee Wine,	90	British Wines, that are	
Second,	<i>ib.</i>	Pricked.	<i>ib.</i>
Third,	91	To Correct Green or Harsh	
Black Currant Wine,	<i>ib.</i>	Wines,	120
Another,	<i>ib.</i>	Another,	<i>ib.</i>
Useful Receipt for Making		To take away the ill scent	
Family Wines,	92	of Wines,	121
Sage Wine,	93	To Sweeten Wines,	<i>ib.</i>
Second,	<i>ib.</i>	For Wine, when lowering	
Walnut Mead Wine,	94	or decaying.	<i>ib.</i>
American Honey Wine,	<i>ib.</i>	For Wine, when Ropy,	<i>ib.</i>
Apricot Wine,	95	Another Method,	122
Another,	<i>ib.</i>	Another,	<i>ib.</i>
Barley Wine,	96	To Sweeten a Musty Cask,	<i>ib.</i>
Sycamore Wine,	<i>ib.</i>	Another,	123
Balm Wine,	97	The Method of Making	
Another,	<i>ib.</i>	Wine in Grape Countries,	<i>ib.</i>
Mulberry Wine,	98	Directions for managing	
Another,	<i>ib.</i>	Wine Vaults,	124
Blackerrry Wine,	99	Directions concerning the	
Another,	<i>ib.</i>	landing, and cellaring, of	
Ginger Wine,	100	Wines in hot weather,	125
Second,	<i>ib.</i>	To Mellow Wine,	<i>ib.</i>



Directions for Racking Foreign Wines,		White Creamery,	139
To manage and improve Red Port Wine, when poor, and thin,	126	To make Claret and Port Wine rougher,	<i>ib.</i>
To Improve and bring about Wine, which has gone Sour,	127	To make Wine Settle well,	141
The Method of Preserving Pricked Wines,	<i>ib.</i>	To Improve White Wine,	<i>ib.</i>
To Discover Lead in Wines,	128	To Fine a pipe of Port Wine,	<i>ib.</i>
To take off the Acid, from a pipe of Port Wine, a different way.	<i>ib.</i>	Hippocrates Sleeve, or filtering bag,	142
Acid,	130	To make Oyster Powder,	143
The Method of Managing Claret,	131	To make a Match,	144
Another Method of colouring Claret,	132	A General Method with Finings,	<i>ib.</i>
A Remedy for Claret that drinks foul,	<i>ib.</i>	To make Colouring for Red French Wines,	145
Another Method of curing Wine, when Ropy,	133	To pass White Wine for Champagne,	<i>ib.</i>
To Fine a hogshead of Claret,	<i>ib.</i>	To make Wine Sparkle like Champagne,	<i>ib.</i>
To Manage, and Fine White Port Wine,	<i>ib.</i>	To Correct Sharp, Tart, Acid Wines,	146
To Improve a butt of Sherry Wine,	134	Another,	<i>ib.</i>
To Fine a butt of Sherry Wine,	<i>ib.</i>	Another,	<i>ib.</i>
To Fine Pale Sherry,	135	To Restore Sour Wine,	<i>ib.</i>
To Improve a pipe of Madeira Wine,	<i>ib.</i>	Another Method,	147
To Fine a pipe of Madeira Wine, when New,	136	German Method of Restoring Sour Wines,	<i>ib.</i>
To Fine Vidonia Wine,	137	Method of preparing Claret Wine for Shipping,	<i>ib.</i>
To Fine a pipe of Vidonia, Lisbon Wine,	<i>ib.</i>	Rules for constructing Wine Cellars,	152
To Fine a pipe of Lisbon Wine,	138	Wine Bitters.	156
Clarification,	<i>ib.</i>		
Another,	<i>ib.</i>	CIDER AND PERRY.	
Another,	139	To Make Cider,	157
Bucella Wine,	<i>ib.</i>	Another Way,	158
Calcavella, Sweet Mountain, Paccaretta, & Malaga,	<i>ib.</i>	To Prevent the fermentation of Cider,	<i>ib.</i>
Tent Wine, Muscadine, Sack, and Bastard,	<i>ib.</i>	To Manage Cider,	159
Old Hock, and Vindegrow,	<i>ib.</i>	To Restore Sour Cider,	<i>ib.</i>
		To Fine and Purify Cider,	<i>ib.</i>
		To Clarify Cider,	160
		To Improve Cider,	<i>ib.</i>
		To cure Cider which is Pricked.	<i>ib.</i>
		To Make cheap Cider from Raisins,	161
		To Refine Cider, and give it a fine amber colour.	162

To Cure Oily Cider,	1	To Prevent, and cure Fox-	
To Cure Ropy Cider,	163	ing, in Malt Liquors.	<i>ib.</i>
To Colour Cider,	<i>ib.</i>	Other Methods of Curing	
To improve and Strengthen		Foxing,	185
Cider,	<i>ib.</i>	To Restore a barrel of Ro-	
The Art of Making and Bot-		py Beer,	<i>ib.</i>
tling Cider,	<i>ib.</i>	To Restore a barrel of Stale,	
To Cleanse Musty Casks,	166	or Sour Beer,	186
To Cleanse Casks that smell		To make a butt of Porter	
Sour,	167	Stout,	<i>ib.</i>
Cider Royal,	168	To restore Frosted Beer,	<i>ib.</i>
To bring on a Fermentation,	<i>ib.</i>	To give New Ale, the fla-	
		vour of Old,	187
		To Protect Malt Liquors	
		against the effects of elec-	
		tricity,	<i>ib.</i>
		To give Beer a rich flavour,	<i>ib.</i>
		Ale Bitters,	<i>ib.</i>
		To sweeten stinking and	
		Musty casks, 188, 189, &	190
		To keep empty vessels	
		sweet,	191
		To Make Purl Bitters,	192
		To render bottled beer ripe,	<i>ib.</i>
		Another Method of ferment-	
		ing, Strong Beer, to pro-	
		duce a pure and excellent	
		liquor,	193
		Process of brewing Windsor	
		Ale, on a small scale,	194
		Strong Beer of an excellent	
		quality and flavour, brew-	
		ed from the extract of	
		the hop only, rejecting	
		the substance,	196
		Mead, or Metheglin,	197
		To recover Sour Beer,	<i>ib.</i>
		Heading,	<i>ib.</i>
		Bottling Beer,	198
		Table Beer,	201
		Fermenting and cleansing	
		in the same vessel,	202
		VINEGAR.	
		Wine Vinegar,	203
		Cider Vinegar,	204
		Vinegar from the refuse of	
		Fruits,	<i>ib.</i>



Vinegar from Beer,	204	Cherry Brandy, a third	
Raisin Vinegar,	<i>ib.</i>	way,	228
Another,	206	Black Cherry Brandy,	229
Another,	<i>ib.</i>	Orange Brandy,	<i>ib.</i>
Gooseberry Vinegar,	206	Second,	<i>ib.</i>
Currant Vinegar,	<i>ib.</i>	Third,	230
Vinegar from sugar,	<i>ib.</i>	Lemon Brandy,	<i>ib.</i>
Receipt for helping Vinegar to sour.	207	Caraway Brandy,	<i>ib.</i>
		Poppy Brandy,	<i>ib.</i>
		Raspberry Brandy,	231
		Another Method,	<i>ib.</i>
On Brandy,	208	Peach Brandy,	232
Improved Method of lower- ing Brandy down to Proof,	210	Another Method,	<i>ib.</i>
Imitation Brandy,	211	Brandy from Fox Grapes,	233
Second,	212	Apple Brandy, or Cider	
Third,	<i>ib.</i>	Spirits,	<i>ib.</i>
Fourth,	213	Another,	235
Fifth,	<i>ib.</i>	To make Brandy, from Beet	
To imitate Foreign Spirits,	214	Root,	236
To imitate French Brandy,	<i>ib.</i>	To make Brandy from Po-	
Second,	216	tatoes,	237
To imitate Cogniac Brandy,	217	Method of extracting spirit,	
How to prepare the Essen- tial oil of Wine,	<i>ib.</i>	from Potatoes, practised, by Mons. Bartrand, at Metz.	239
To purify and improve the flavour of malt spirits pre- vious to their being con- verted into Brandy,	221	Method of preparing pota- toes for distilling,	240
Another Method of improv- ing English brandy, and making it appear like French,	<i>ib.</i>	Another Method,	<i>ib.</i>
To Fine Spirits,	222	To make tincture of salt of Tartar,	241
To Condense vapours in distillation,	<i>ib.</i>	To make fine Brandy Shrub,	<i>ib.</i>
To make Brandy from mo- lasses,	<i>ib.</i>	Second,	242
To prepare tincture Japan- ica,	223	Third,	<i>ib.</i>
The Method of colouring Brandy.	<i>ib.</i>	Stoughton's Brandy Bitters,	<i>ib.</i>
Another,	225	Of distilling Persimous,	243
Another imitation Brandy,	<i>ib.</i>	To rectify and improve the flavour of spirits, previous to their being converted into Brandy, Rum, or Gin, and for all other purposes,	245
For twenty gallons of cher- ry Brandy,	226	To distil spirit from Carrots,	<i>ib.</i>
Cherry Brandy, another way,	228		

To make Jamaica Rum,	251	Method of lowering Gene-	
To imitate Jamaica Rum,	252	va down to proof,	272
To obtain Rum from molas-		To prepare Geneva as in	
ses,	ib.	Holland,	273
Another Method of lowering		To make English Geneva,	275
and improving a punch-		Another,	ib.
eon of fourth proof Jamai-		To make twenty gallons of	
ca Rum so as to make it		Geneva,	276
into four puncheons of		Geneva Bitters.	277
first proof.	253	Whiskey Cordial.	ib.
To make New-England in-		To Make Lime Water.	ib.
to St. Croix,	254		
To make Lemon Syrup,	255	<b>LIQUEURS.</b>	
Syrup of lemon or orange		To make Ratafia d'Angeli-	
peel,	ib.	ca,	278
The Justice's orange Syrup,		Anisette de Bordeaux,	ib.
for punch,	ib.	Real Creme des Barbades,	ib.
Clarified Syrup,	256	Eau de Barbades,	279
To Candy Orange Peel,	ib.	Ratafia de Cafe,	ib.
To Candy Lemon Peel,	557	Ratafia de Cassia,	ib.
Lemonade,	ib.	Ratafia de Cerises,	ib.
Quintessence of Lemon peel,	ib.	Ratafia de Chocolat,	ib.
Essence or tincture of Gin-	ib.	Eau Devine,	280
ger,		Elephant's Milk,	ib.
Essence or tincture of Nut-		Ratafia de Grenoble,	ib.
meg,	258	Marasquin de Groseilles,	ib.
Essence, or tincture of Le-		Huille de Venus,	281
mon Peel,	ib.	Liquidilla,	ib.
Lemon Syrup,	ib.	French Marasquin, a new	
Elder Syrup,	ib.	Liquor,	ib.
Capillaire,	259	Ratafia de Brou, de Noix,	282
To make Rum Shrub,	ib.	Ratafia de Noyeau,	ib.
Rum Shrub, a second way,	260	Creme de Noyeau de Mar-	
Rum Shrub, a third way,	ib.	tinique,	ib.
Rum Shrub, a fourth way,	ib.	Ratafia de Ecorces d'Or-	
Another Rum Shrub, made		anges,	283
with currants,	261	Ratafia de flowers d'Oran-	
Rum Bitters,	ib.	ges,	ib.
To Make excellent Punch,	ib.	Creme d'Orange, of supe-	
To take off the blackness		rior flavour,	ib.
from Rum or Brandy, oc-		Ratafia a la Violette,	284
casioned by the touch of		Eau de Bigarde,	ib.
Iron	262	To make Usquebaugh,	285
Second,	ib.	Royal Usquebaugh,	ib.
		Second,	286
		Third,	ib.
		Compound Ratafia,	287

Another Dry, compound,		To cure Hams,	305
Ratafia,	288	Another Method,	ib.
Common Ratafia,	ib.	To cure Hams, as is prac-	
Second,	289	tised in Virginia,	306
Third,	ib.	Another Method,	ib.
Ratafia from Peaches,	ib.	To dry Salt Beef and Pork,	307

CORDIALS.

General Rules,	290	To cure Herrings, Mac-	
To Make Anisseed Cordial,	291	karel, Shad, &c. &c.	ib.
Another,	ib.	Another Method of curing	
Cinnamon Cordial,	ib.	Fish,	308
Another,	292	To Pickle Meat,	ib.
Caraway Cordial,	ib.	To Pickle in Brine,	309
Another,	ib.	Another Method,	ib.
Wormwood Cordial,	293	Third Method,	310
Cedrat Cordial,	ib.	To Pickle Salmon,	ib.
Citron Cordial,	294	To Pickle Salmon, Her-	
Second,	ib.	rings, Mackerel, Shad,	
Third,	ib.	&c. &c.	ib.
Clove Cordial,	295	To Pickle Artificial Ancho-	
Another,	ib.	vies,	311
Coriander Cordial.	ib.	To Pickle Herrings, Mac-	
Golden Cordial,	296	karel, Shad, &c. another	
Second,	ib.	way,	ib.
Third,	297	To Preserve Fish by Sugar,	312
Loveage Cordial,	ib.	To Preserve Fish and Meat	
Another,	298	in the Portuguese man-	
Lemon Cordial,	ib.	ner,	313
To Make Nectar,	ib.	Easy Method of preserving	
Nectar, another way,	299	animal food sweet, for se-	
Imperial Nectar,	ib.	veral days, in the height	
Irish Nectar,	ib.	of Summer,	ib.
Queen's Cordial,	300	No preserve Game in hot	
Prince's Cordial,	ib.	weather,	ib.
Prince's Cordial, another		To sweeten Meat, Fish,	
way,	ib.	&c. that is tainted,	314
To Make Noyeau,	301	To purify Fly-blown Meat,	ib.
Orange Cordial,	ib.	Method of preserving eggs,	ib.
Peppermint Cordial,	302	second,	315
		Third,	ib.
		To preserve eggs perfectly	
		fresh, for twelve months,	ib.
		To preserve eggs fresh	
		and good, for two years.	316

SALTING, AND CURING  
BEEF, PORK, AND FISH.

Rules, and Directions,	303	PICKLES AND PRESERVES.	
To Salt and Cure Beef	ib.	Rules and directions,	317
Method of curing Pork,	304	To Pickle Onions,	318
Another Method,	305	Another,	319

To Pickle French beans,	ib.	TO PRESERVE FRUITS	
To pickle Red cabbage,	320	AND VEGETABLES.	
To Pickle Walnuts,	ib.		
To Pickle Cucumbers,	321		
To Pickle Beet Roots,	322	To preserve Bush Beans	
To Pickle Mushrooms,	il	fresh and good through	
To Pickle Cauly flowers,	323	the Winter,	332
To Pickle Barberries,	ib.	To preserve Parsley fresh	
To Make Sour Krout,	324	and green, for any length	
To Make Walnut Ketchup,	ib.	of time,	ib.
To Make Mushroom Ketch-		To preserve Cabbages dur-	
up,	325	ing the Winter,	333
ON PRESERVES.		To preserve Hazle nuts in	
Rules and Directions,	325	great perfection for many	
Peach Preserve,	326	months,	ib.
Damson Preserve,	327	Method of keeping Apples,	ib.
Apple preserve.	ib.	To preserve Apples,	ib.
Strawberry Preserve,	ib.	Simple and singular manner	
To preserve Strawberries		of preserving Apples from	
whole,	328	the effects of frost, in	
To bottle Damsons, and all		North America,	334
other Fruits,	ib.	Advantageous method of	
To Preserve Grapes	329	preserving, Apples, Pears	
To Preserve Fruits in		Oranges and Lemons, Po-	
Brandy or other Spirits,	ib.	tatoes, Turnips, Carrots,	
The American citron, or		Parsnips, &c. in barrels,	
Water Melon,	ib.	all the year round,	335
To preserve Pears, Plumbs,		To preserve Potatoes, from	
and other fruits for tarts,		frost.	337
or pies,	ib.	To Preserve Oranges and	
For preserving Quinces,	230	Lemons.	ib.
To preserve Quinces in loaf		Method of Preserving	
sugar,	ib.	Grapes,	ib.
To Preserve Apricots,	331	Another method of preserv-	
To preserve Raspberries,	ib.	ing Apples,	338
To preserve Cherries and		Excellent Antiscorbutic Bit-	
Currants,	ib.	ters.	340

# USEFUL GUIDE, &c.



## W I N E S.

WINE is an agreeable, spirituous, aromatic liquor, prepared by fermenting the juices of those vegetables which contain saccharine matter. Its constituent parts are : 1. Sugar, or the sweet juice, usually termed must, from which the liquor is obtained ; 2. Alcohol, or pure spirit, that is disengaged during the vinous fermentation : 3. Water. 4. Colouring matter. 5. Vegetable extractive matter. 6. Essential oil, to which the peculiar flavour is owing. 7. Acetic, Malic, and Tartaric acids. The process of making wine, does not essentially differ from making cider.

The earliest introduction of the Vine into the western parts of Europe, is stated to have been about the year 280, under the immediate sanction of Probus, the Roman Emperor, who throughout his whole dominions, was a zealous encourager of agricultural pursuits. There can be no doubt that vines were anciently propagated in Great Britain for the purpose of wine, and that there were vine-



yards of considerable extent in Gloucestershire, Hampshire, and some other counties : but as vines are principally found to flourish in inland countries, lying between the thirtieth and fiftieth degrees of latitude, it is evident that there can be no part of Great Britain sufficiently adapted to their successful cultivation.

The kinds of wine are extremely various. The difference which exists between them is not, however, so much owing to a distinction in the species of grapes, as in the quality of the fruit, produced by the varieties of soil, cultivation, and climate to which they are subject. This likewise depends, in some instances, on the peculiar mode of fermentation, and the state of the grapes from which the wine is produced.

### PORTUGUESE WINES.

Of all the kinds of wines that are consumed in England, none are so much in request as Red Port. This has its name from the City of Oporto, in the neighbourhood of which the vines producing it are chiefly cultivated. A great proportion however of the Port that is consumed in England, is said to be mixed with a Spanish red wine of inferior quality, or to be otherwise adulterated. Red Port is brought over in casks called pipes, which measure 138 gallons each, and ought to fill 52 dozen bottles of legal measure.

The difference in colour betwixt red and white

wines does not depend so much upon the quality of the grape, as upon the mode in which they are prepared. The juice of red grapes, if carefully pressed, and fermented separately from the skins, forms a white wine. If the skins be pressed so as to discharge the colouring matter, or if they be allowed to remain in the juice during the fermentation, the wine assumes a red tinge,

### WHITE PORT AND LISBON,

Are two kinds of white wine which we receive from Portugal. Of these the former was much in demand some years ago, but now seldom called for; the latter is still in use.

### FRENCH WINES.

Many excellent wines are produced in France. That usually considered the best is Burgundy; a red wine of very delicate flavour, which has its name from the province where it is made. The wines of the neighbourhood of Orleans, however, after having been matured by age, are much like Burgundy. Claret is the only French red wine for which there is any great demand in England. It is thin and highly flavoured, and is chiefly supplied from the neighbourhood of Bordeaux. Some of the red wines of Champagne are highly prized for excellence and delicacy, though they occasionally have a pungent and sourish taste,

No French white wine has so much celebrity as Champagne. This is of two kinds : one of which called still or quiet Champagne, has gone through the whole process of fermentation ; the other, which has the name of sparkling Champagne, has been bottled before the fermentation was complete ; this consequently proceeds slowly in the bottle, and causes the wine, on the drawing of the cork, to sparkle in the glass. Frontignac and Muscadell are white wines, the delicious production, of Languedoc.

### SPANISH WINES.

The country about Zeres in Andalusia, is celebrated for a grape which produces an excellent wine called Sherry. There are several French and English houses at Zeres and Seville, which trade to great extent in this wine. It is very strong and full bodied, owing in a great degree to the quantity of brandy with which it is mixed. In the province of Valencia, some of the proprietors have wines of different kinds, sixty, eighty, and even an hundred years old, the prices of which differ according to their age. Rota in Seville, produces a rich and sweet white wine ; and the country around Malaga, near Gibraltar, is celebrated for white wine which is known by that name, and so assiduously is the cultivation of the vine there pursued, that the export of the produce of the vineyards yields to the inhabitants more than 200,000*l* sterling per annum.



Spain produces a harsh and inferior kind of red wine, but the Territory Alicant produces a very rich and excellent kind of red wine. The sweet red wine which we call Tent, is chiefly imported from Cadiz, and in Hogsheads of about 60 gallons each ; it is made of the juice of a particular kind of grapes which are not used for this purpose until some time after they have been perfectly ripe.

### ITALIAN WINES.

Notwithstanding the celebrity of many of the wines of Italy, by far the greater part of what are now manufactured in that country, are thin and bad. Certain vineyards on Mount Vesuvius, however, still have great celebrity for a luscious red wine, called Lachryma Christi.

### GERMAN WINES.

Germany produces many excellent wines of which Tokay, Hock, Rhenish, and Moselle are the most celebrated. Tokay has its name from a town in Hungary, in the neighbourhood of which it is chiefly made. The quantity of the wine is so small, that even on the spot it is sold at a very high price. It is made by mixing with the common grape a portion of luscious, half dried, and shrivelled grapes ; the latter being absolutely necessary to constitute the peculiar quality of the wine. The two kinds of grapes are pressed separately, and the juice

is afterwards mixed, fermented, and strained through a cloth or sieve into the barrels in which it is to continue. No art is used to fine these wines or to make them keep. The best do not long remain in the place where they are made, a great portion of them being soon sent into the cellars of the nobility in other parts of Hungary. Tokay is certainly a fine wine, but is no way adequate to the price for which it is sold. Several years ago it could not be purchased even in Hungary, for much less than half a guinea of English money per bottle ; and yet there are few Englishmen, who, except on account of its scarceness would not prefer to it good Claret or Burgundy. Of all the German wines, that which is in greatest demand in England is Hock. This has its name from the town of Hockstead in Saubia, celebrated for a great battle which was fought in its neighbourhood by the French and the Allies in 1704. Rhenish and Moselle, are produced chiefly, on the banks of the Rivers Rhine and Moselle, and have a cool, sharpe taste, and considerable strength. Anterior to the late wars in Germany, there were wines in the cellars of the noble and wealthy inhabitants of that country, which were more than an hundred years old, and of such body, as to be uninjured even by that great age.

### MADEIRA AND TENERIFFE WINES.

To the Madeira and Canary Islands we are indebted for some excellent white wines. Of these

Madeira wine is considered by far the most valuable, particularly after it has been ripened by conveyance into a hot climate. The number of pipes of Madeira annually made in that Island is about 30,000. The grapes, when gathered are put into wooden vessels and the juice is extracted by persons treading upon them

The Canary Islands gave name to a rich white wine which was formerly in great esteem under the name of Canary sack, and is now usually called Malmsey Madeira. The genuine Malmsey wine, which is of sweet and luscious flavour, and rich golden yellow colour, is the produce of Malvisia one of the Greek Islands, and thence had originally its name, the French Merchants denominating it Vin de Malvesia; but so little is now made that few persons can possess it. Teneriffe wine, when two or three years old, has much the flavour of Madeira, but after that age it sometimes becomes so sweet and mellow, as somewhat to resemble Malaga.

### CAPE WINES.

There are produced at the Cape of Good Hope two kinds of peculiar rich, sweet, and delicate wines called red and white Constantia. The farm from whence they have their name is situated about eight miles from Cape Town. The grapes of this farm, owing as it is supposed, to some peculiarity in the

soil, are superior to any other in the whole country. The vintage commences about March or April, and great care is taken in the manufacture of the wine, no fruit being used but such as is fully ripe and in the highest perfection. The annual produce is considered to be about 60 pipes of the red, and 100 pipes of the white wine. Constantia is in perfection when about two years old: but when kept six or seven years, it sparkles in the glass somewhat like wine which has not undergone a perfect fermentation.

### EXPERIMENTS ON FOREIGN WINES, BY DR. REESE.

It is proper to observe that all wines naturally possess a proportion of alcohol, (ardent spirit,) but to the foreign wines, a quantity is added to prevent their running into the acetous fermentation during their voyage to this country, and this is proportioned to the quality of the wine. In order therefore, to ascertain the quantity the different wines contain on an average, the experiments have been made on wines from different venders. Brandy and Rum are sold at different degrees of strength; indeed some termed white brandy and white rum are highly rectified. The brandy and rum employed in the following experiments, were obtained from a respectable wine merchant, who was desired to send samples of the articles as generally sold to the public.

A Bottle of Pale Sherry three years old, containing 25 oz. produced 3 oz. of alcohol.

A bottle of Madeira two years old, containing  $25\frac{1}{2}$  oz.; 2 oz. 5 dr. alcohol.

A bottle of Cape wine one year old, containing 25 oz.;  $2\frac{1}{2}$  oz.

A bottle of old Hock, containing 21 oz. nearly an ounce.

A bottle of Brandy containing 24 oz.; 10 oz.

A bottle of Rum containing  $24\frac{1}{2}$  oz.;  $9\frac{1}{2}$  oz.

A quart of public house Ale (not bottled) from the Brewery of Mr. Wyatt, 1 oz.

From a quart of common draught Porter, from the brewery of Messrs. Elliot & Co.  $5\frac{1}{2}$  dr.

A bottle of Port wine containing 26 oz. which had been in bottles seven years produced 2 oz. and 7 dr. of alcohol (ardent spirit.)

A bottle of Port Wine containing  $25\frac{1}{2}$  oz. one year in bottles and two years in wood, 2 oz. 2 dr.

The residuum of Port Wine contains an astringent extract, and more tartaric acid than that of Maderia; in one bottle of Port a small portion of vitriolic acid was detected. The Hock also contains considerable of Tartaric acid. The residuum of the rum contains raw sugar, and the brandy burnt sugar, with a pungent aromatic, resembling capsicum. The residuum of the ale and porter was very bitter, and the spirit of the former was slightly flavored with the essential oil of the hop; both contain saccharine matter.

Port Wine is imitated by cider, sloe juice, log-



wood and sugar : or by Morello cherries, and log-wood.

As a tonic medicine, the preference is generally given to port wine, on account of its astringency, but in cases of indigestion and irritability of the bowels, the tartaric acid is a very great objection to it. When this wine is (what the merchants term) on the feet, it is the practice with some to add to it a little vitriolic acid, which more effectually checks it than brandy. Sherry wine appears to be the best fermented, and more free from tartaric acid and saccharine matter than any other.

It is however, at best only a diluted spirit. Brandy is preferable to rum on account of its being entirely free from sugar.

Madeira, Port, and Hock, contain of acid about the quantity of a lemon in each bottle. This acid, is partly tartaric, acetic, and malic. The tartaric and malic, may be discovered by precipitating immediately a solution of sugar of lead ; the acetic, by boiling wine on pure white or red lead, and all that is held in solution, is to be held by acetic acid.

That there is acid in wine, may be discovered immediately, by means of Litmus or turmeric paper. The quantity, by the quantity of dry salt of tartar required to neutralize a given portion of wine.

All artificial imitations of Madeira, Lisbon, and Sherry, are made by means of sweets obtained from Malaga raisins, of which to a gallon of water, from 2 to 7 *lb.* are used with from  $\frac{1}{2}$  *lb.* to 3 *lb.* of white Havanna sugar, and from 4 to 6 *dr.* of white crude tartar.

## ARTIFICIAL WINES.

We start upon the grounds that artificial wines are intended to be imitations of wines prepared from grapes. In the first place, therefore, we have to prepare a juice or must similar to the juice or must of the grape in its general composition. Now, no fruit whatever yields a juice precisely similar to that of the grape. In our northern climate more especially, the saccharine principle, which is the fundamental principle in wine making, exists in very minute proportions in most fruits. It must be therefore supplied artificially. The tartaric acid, or rather tartar which appears to be another essential principle in wine-making, is likewise wanted in most of our fruits. This, therefore must be supplied. On the contrary other principles and particularly the malic acid, appear to exist in too large a proportion in most of our fruits, which in their natural state, are better adapted for making ciders than wines. To get rid of the malic acid, and to prevent its deteriorating effects, is difficult or perhaps impossible; and this will doubtless always render artificial wines, in general, inferior to the grape, though very near approaches may be made by judicious management.

The practical mode of obviating these difficulties is to dilute the juice of the fruit to such a degree, that a given quantity of it when diluted shall contain no more of the malic acid, for example,

than a given quantity of the juice of the grape ; and, as before observed, to supply artificially the two grand principles, sugar and tartar, which are wanting. Having thus prepared an artificial must, as nearly resembling in its composition that of the grape as possible, the application of the other principles will be obvious, as we have nothing to do but to manage, in general all the subsequent processes precisely as if we were operating upon the must of the grape. We shall now therefore descend from generals to particulars, and, after having made a few remarks upon our native fruits, endeavour to point out the modes in which the more important foreign wines may be best imitated, by them.

### SWEET WINES.

Sweet wines may be made from almost any ripe fruits. Those most generally employed, however, are the gooseberry and currant. We shall suppose that we wish to make the quantity of 10 gallons of sweet wine from one or other of these fruits. For this purpose the following are the proportions and other circumstances to be attended to. 40*lb.* of fruit are to be introduced in a clean and sufficiently capacious tub, in which it is to be bruised in successive portions, by a pressure sufficient to crush the berries without breaking the seeds, (or if gooseberries be employed,) without materially compressing the skins. 4 gallons of water are then to be poured



into the vessel, and the contents are to be carefully stirred and squeezed in the hand until the whole of the juice and pulp are separated from the solid matters. The materials are then permitted to remain at rest for a period of time, from 6 to 24 hours, when they are to be strained through a coarse bag, by as much force as can conveniently be applied to them. One gallon of water may afterwards be pressed through the marc for the purpose of removing any soluble matter which may have remained confined. From 30 to 40 pounds of sugar, according to the desired strength and sweetness of the wine, and about 6 ounces of cream of tartar, or what is better, crude tartar, are now to be dissolved in the juice thus procured, and the total bulk of the fluid made up with water, to the amount of ten gallons and a half.

The liquor thus obtained, is the artificial must, which is equivalent to the grape. It is now to be introduced into a tub of sufficient capacity, which is to be well covered, and placed in a temperature varying from  $55^{\circ}$  to  $60^{\circ}$ . Here it is to remain two or three days, more or less, according to the symptoms of fermentation which it may show, and from this tub it is to be drawn off into the cask, where the fermentative process is to be brought to the point desired. As the fermentative process proceeds, the bulk of the liquor diminishes, and its place must be supplied from time to time, by the superfluous portion of must made for the purpose, so as to keep the liquor always near the bung hole. When the fermentation has subsided a little, the

bung may be driven in, taking care however, to leave a small hole open by its side, which may be stopped with a peg, and opened occasionally to give vent to any air that may be generated

When the wine has arrived at the desired point of sweetness, &c. it must be racked and clarified in the manner afterwards described, and these processes must be repeated, and the casks sulphured if necessary, in order to prevent the fermentative process from proceeding further. In general, however, one racking in the following December or January will be sufficient, after which it may be kept in the cask for any length of time, or it may be bottled without the usual precaution. A fine, serene and cold day should be chosen for these operations. Sometimes the fermentative process will stop before the wine has arrived at the desired point, in which case it may be commonly re-excited by raising the temperature, and shaking the cask; or if these fail, by having recourse to the means formerly described for that purpose.

By attending to these general directions, sweet wines may be made from other fruits, care being taken to increase or diminish the quantity of sugar according to the natural sweetness of the fruit employed.

## **DRY AND STRONG WINES.**

### **MADERIA, SHERRY, &c.**

The 4th class of wines consist of those which are both dry in their quality and strong in their nature ; such are Madeira, Sherry, &c. the theory of these, from what has been said, will be sufficiently apparent. With due attention to the fermentative process, such wines may be made of the requisite degree of strength without brandy.

By means of this, however, if managed as before directed, the operator has it always in his power to produce wines of any degree of strength.

We need not here repeat the different methods of imparting different flavours to domestic wines, or of correcting their faults, since they differ in no respect from those recommended to be adopted in the manufacture of wines from grapes, to which therefore we refer.

The following general remarks upon the fabrication of domestic wines, will not perhaps prove uninteresting to our readers.

The great radical defect in the manufacture of domestic wines, is using too small a proportion of fruit compared with the sugar employed. It is this circumstance chiefly, which renders the fermentative process incomplete, and thus imparts that sweet and mawkish taste to our domestic wines, which renders them intolerable to many people, and even

to all, perhaps, without the addition of brandy. The proportions of fruit and sugar given above, may be considered as mean standards, which may be varied either way, according to circumstances and the nature of the wine intended to be produced ; a very superior class of fruit wines may be manufactured by using the juices of our different fruits, either alone or very slightly diluted with water.

We mentioned that some fruits, and especially the black currant, were much improved by boiling. For this purpose it will be sufficient that the fruit be brought to the boiling point before using it, the water in the vessel being so managed as to avoid any risk in burning. The black currant thus treated, and subsequently managed upon the principles we have endeavoured to lay down, is capable of making a wine very nearly resembling some of the best sweet Cape wines.

The fermentative process being rendered tardy and incomplete, by the improper adjustment of the sugar to the fruit, is frequently endeavoured to be excited by yeast ; nothing can be more injudicious than this. Yeast invariably spoils wines, by imparting to them a flavour that nothing will overcome. The only ferment to be employed in wine making is that furnished by nature ; and when this is defective, as is sometimes the case in our domestic fruits, the ferment of the grape must be supplied artificially. This may be done by introducing a certain proportion of Crude tartar, the dose of which may vary from 1 to 6 per cent,

without materially affecting the wine, as a great proportion of what escapes decomposition will be subsequently deposited. All fruits, except the grape, will require more or less tartar.

The last circumstance we shall notice is the introduction of brandy, or other spirit, into domestic wines. As commonly manufactured, they often require, as we have just stated, this addition to render them tolerable. We trust, however, that from the attention that has lately been paid to the subject of artificial wines, the modes of manufacturing them will be better understood, and that this will no longer be the case. Fine wines are invariably spoiled by the addition of ardent spirit, which seems to have the effect of slowly decomposing them, and thus of destroying that delicate, lively, and brisk flavour, so eminently possessed by all natural wines. Hence it is seldom or never used in wine countries ; or rather it is confined to the manufacture of those wines destined for this country, where only this barbarous practice is tolerated. We again repeat, that if the fruit and sugar be duly adjusted to one another, and the fermentative process be properly managed, an infinitely better wine will be produced without the use of brandy than can ever be produced with it.



**BRISK & SPARKLING WINES.****CHAMPAIGNE, &c.**

This Class of wines, which may be at the same time either sweet or comparatively dry, our readers will recollect the methods adopted in Champagne, and other countries where they manufacture sparkling wines from the grape. Now these principles are to be held in view in the manufacture of artificial wines intended to possess similar properties; the fruits most generally employed for forming wines of this description, are the immature gooseberry and currant; sometimes also immature grapes, and even vine leaves are made use of for a similar purpose, but grapes are doubtless preferable when they can be procured. Wines of this description require much more care. If gooseberries are employed 40 *lb.* of this fruit, and 30 *lb.* of fine white sugar, and about 6 ounces of tartar are sufficient for making 10 gallons of wine, with the same process precisely, as those for making sweet wines. The must, however, ought to remain in the fermenting tub for about 24 hours, or two days only, when it is to be transferred to the cask, and the process of filling up, &c. managed as before, except that the wooden peg or spile must be permanently tightened as soon as the danger of bursting the cask is over, the wine thus made may commonly remain during the winter in a cool cellar.



as it is no longer necessary to excite the fermenting process. To ensure its fineness, however, it is a good practice to draw it towards the end of December into a fresh cask, so as to separate the lees, and if at this time it should prove too sweet, instead of decanting it will be better to stir up the lees so as to renew the fermenting process, taking care to increase the temperature at the same time. At whatever time the wine has been decanted, it is to be fined with Isinglass, in the usual manner. Sometimes it will be necessary to decant it a second and even a third time, into a fresh cask. All these operations should take place, as formerly mentioned, in dry, cool weather, and the wine must at any rate, be finally bottled in March. If immature currants be employed, which are perhaps upon the whole preferable to gooseberries, the same proportion of fruit, sugar, and tartar, and the same modes of management, may be had recourse to; care being taken to separate carefully the stalks of the currants. If grapes be used for the purpose, they may safely be taken at different degrees of ripeness, nor is it necessary to attend to the selection of any particular variety, the same proportions of fruit and sugar will be proper as when Gooseberries and Currants are employed, but the tartar must be omitted. The husks also may be permitted to ferment with the liquor in the vat. The subsequent management is to be precisely the same as that described before, an excellent wine may be made of the present description from the leaves and ten-

drils of the vine. About 40 pounds of these and 25 or 30 pounds of sugar will be sufficient for ten gallons of wine. To prepare it 7 or 8 gallons of boiling water are to be poured upon the leaves in a tub, and permitted to remain for 24 hours, the liquor being poured off the leaves must be strongly pressed, and subsequently washed with another gallon of water. The sugar and the remainder of the water are then to be added, and the fermentative and all the subsequent processes conducted precisely the same as before. The present class of wines, if the process has been successful (which is not always the case) is brisk, and precisely similar in their qualities (flavour excepted) to the wines of Champagne, with the strength of the best Sicily.

### REMARKS.

In Oporto, the complete fermentation of the must, takes place in the vat. The wine is then introduced into large tuns, capable of holding 25 pipes each; and at this stage the brandy is added according to the judgment of the manufacturer.

In *Madeira*, the second or insensible fermentation is carried on in casks, and the wine is racked from them in three or four months, at which time a portion of the brandy is added. The remainder is reserved to be mixed at the time of exportation.

## SHERRY.

In the manufacture of sherry, the grapes are first slightly dried, and sprinkled with quick lime. They are then wetted with brandy, on being introduced into the press, and a portion of brandy is added to the must, before the fermentation commences. The subsequent processes consist in the repeated rackings at intervals of a month or two till March, brandy being added at each racking.

The object of racking the wines is to separate the dregs consisting of tartar, &c. deposited from the wine, and which, if left, are liable to render it sour, by re-exciting from time to time, the fermentation. The tendency to fermentation is counteracted by a process termed sulphuring, and the spontaneous separation of the dregs is rendered more complete by clarification.

The sulphuring of wines consists in impregnating them with burning sulphur, or sulphurous acid, and is generally effected by burning sulphur matches in the casks.

These matches are made in different ways, aromatics being sometimes mixed with the sulphur; but the sulphur is the only useful and necessary ingredient. Sometimes a wine highly impregnated with sulphurous acid is prepared, a little of which being mixed with the rest answers the purpose of burning matches in the cask. Other substances, according to Dr. M'Culloch, answer the same pur-

pose as sulphuring ; namely the black oxide of manganese, and particularly the sulphate of potash, a drachm of which salt is sufficient for a pipe of wine, and is very effective in counteracting the fermentative process. The theory of these processes is very obscure.

We have before observed that the mere racking of wines is not sufficient to render them pure, and various methods are adopted at the racking period, to render this operation more effectual, and these altogether constitute the process termed clarification.

Lord Bacon mentions a practice among the ancients, of putting wine into vessels well stopped, and letting them down into the sea. That this practice is very ancient is manifest from the discourse of Plutarch, about the efficacy of cold upon must.

Different periods, as before mentioned, are chosen in different districts for racking wines. Thus the wines of Hermitage are racked in March and September, those of Champagne about the middle of October, the middle of February and the latter end of March. If possible a serene and settled state of the atmosphere, and a dry and cold day, should be chosen for the purpose, as the wine is always turbid in damp close weather, and during the prevalence of southerly winds.

In racking wines, it is generally desirable to expose them as little as possible to the atmospheric air. In some districts, a syphon is employed for the purpose. In Champagne they use a sort of pump.

Dr. M'Culloch recommends that the wine should be transferred from one cask to another by means of a leather hose, and this method is undoubtedly preferable. For clarifying wines, a great variety of substances are employed.

Isinglass, and albumen, either from eggs or blood, are the most common ; but gum, starch, rice, milk, the shavings of beech wood, gypsum, sand, &c. are used in different wine countries. An ounce of Isinglass, or about 18 or 20 whites of eggs, are sufficient for 100 gallons of wine.

### IN MADEIRA WINES

It is the practice at present to use sweet and bitter almonds, hence the nutty flavour of these wines. In Egypt, the flower of the vine itself has been employed from time immemorial, and is still used in different wine countries ; its odour is very like that of mignonette, which may be doubtless substituted for it. Raspberries, orris root, elder flowers, wormwood, and a variety of other substances, are employed for a similar purpose. In using these different articles the usual practice is to suspend the flavouring ingredients in the cask a few days during the stage of insensible fermentation, by which means their flavour is retained without a chance of being dissipated. Where the strength is deficient, brandy is added, according to circumstances ; and to render the mixture of this more complete, it should be added while the process of insensible fermenta-



tion is going on. If there be a necessity to add it after the wine is completed, it should then be managed by the fretting process.

The last of the circumstances connected with wine making is the means of obviating those diseases to which wines are liable.

One of the most common diseases of weak wines is *Acidity*. Strong wines for obvious reasons seldom become sour. Where acidity is present only in a slight degree, it may be palliated considerably by sugar, or by the addition of must concentrated by boiling. It is obvious, however, that the acid can only be got rid of by neutralizing or destroying it. For this purpose the alkalies and alkaline earths have been employed, but they impart a disagreeable flavour to the wine. Of these substances, lime is the safest and best. It was formerly the practice to employ lead, in some form or other, for counter-acting acidity in wines ; but we trust that this murderous practice has been long since laid aside.

*Ropiness*, is another disease to which wines are liable. This occurs more particularly in those which contain a good deal of extractive matter. It may be much relieved, and sometimes cured, by exposing the bottles to the sun and air, by agitating and subsequently uncorking them, by adding a small quantity of vegetable acid, and by fining.

*Mustiness*, or other ill flavour communicated by the cask or cork. This appears to be, in general, absolutely incurable, though it may be sometimes diminished by agitating the wine in contact with the



air, or by the introduction of common air or carbonic acid, by pumping.

Many of the processes followed in imparting colour, flavour, strength, &c. to wines are unknown to the public, and confined to the cellars of the manufacturer or the merchant. The general principles however, are sufficiently obvious. The roughness and colour of red wines are derived, as we formerly stated, from the husks of the fruit ; and when it is wished to impart those qualities in a higher degree, the manufacturers sometimes mix a certain portion of wild and high coloured grapes with the other fruit, at other times various astringents and coloured drugs are employed, as catechu, kino, logwood, &c. popular ingredients are the juices of sloes or elderberries. The chips of oak and beech wood are also employed. With respect to yellow tints, these can be all imitated by means of burnt sugar. As to flavours in general, those which are foreign and unusual are unpleasant. Custom, however, has reconciled us to many. The ancients seem to have been much more accustomed to artificial flavours, than the moderns, and the most in request was the turpentine or resinous flavour, which was imparted by means of chips of firwood, a practice still followed in modern Greece.

*Fretting.* It generally happens that when two wines are mixed together, the fermentative process is partially renewed or the mixture is technically said to fret ; whence the practice itself has derived the name of fretting in. Mixed wines, appear to

unite into one durable and homogeneous liquor, in consequence of this fermentation. It is therefore desirable, if possible, to mix wines only at those periods when they both show a tendency to fretting, which, according to Chaptal, in the wine countries, appears to be at three different seasons of the year, viz. when the vines begin to shoot, when they are in flower, and when the fruit begins to acquire colour. The wines being then proportioned according to the fancy or experience of the maker, a strong fermentation is excited, which is still further assisted by agitation. The wine thus becomes homogeneous and shows no more tendency to farther change than if it had been originally produced by one operation; and the repetition of the processes of fining and racking renders it perfect.

In wine countries, particular wines, distinguished either by their strength, harshness, colour or flavour, are often manufactured for mixing with others, and are applied according to circumstances. For making such wines, different fruit and peculiar management are often resorted to. The usual faults of wines requiring correction are sweetness, dryness, bordering on acidity, and excess or defect of briskness. Connected also with this part of the subject are the means of imparting to wines, colour, flavour, and strength, and other remarkable properties. Sweetness arise from the presence of too much saccharine matter, and may be generally remedied by prolonging the fermentation. On the contrary, when the fermentation has been carried on so far as to decomp-

pose the whole of the sugar, the wine is said to be dry; and if the original quantity of sugar has been defective, it will have a strong tendency to become sour. The remedy in this case is, to add sugar, or sometimes brandy.

The following table has been given by Mr. Brande, representing the quantity by measure of alcohol, sp. gr. 825, contained in different wines, and other fermented liquors. The wines were all genuine.

						Proportion of Spirit per cent. by measure.
1. Lissa	-	-	-	-	-	26. 47
Do.	-	-	-	-	-	24. 35
Average	-	-	-	-	-	25. 41
2. Raisin Wine	-	-	-	-	-	26. 40
Do.	-	-	-	-	-	25. 77
Do.	-	-	-	-	-	23. 20
Average	-	-	-	-	-	25. 12
3. Marsala	-	-	-	-	-	26. 30
Do.	-	-	-	-	-	25. 05
Average	-	-	-	-	-	25. 09
4. Port	-	-	-	-	-	25. 83
Do.	-	-	-	-	-	24. 29
Do.	-	-	-	-	-	23. 71
Do.	-	-	-	-	-	23. 39
Do.	-	-	-	-	-	22. 30
Do.	-	-	-	-	-	21. 40
Do.	-	-	-	-	-	19. 00
Average.	-	-	-	-	-	23. 96

5. Madeira	-	-	-	-	24. 42
Do.	-	-	-	-	23. 93
Do.	-	-	-	-	21. 40
Do.	-	-	-	-	19. 24
Average	-	-	-	-	22. 27
6. Currant Wine	-	-	-	-	20. 55
7. Sherry	-	-	-	-	19. 81
Do.	-	-	-	-	19. 83
Do.	-	-	-	-	18. 79
Do.	-	-	-	-	18. 25
Average	-	-	-	-	19. 17
8. Teneriffe	-	-	-	-	19. 79
9. Colares	-	-	-	-	19. 75
10. Lacryma Christi	-	-	-	-	19. 70
11. Constantia, White	-	-	-	-	19. 75
12. Do. Red	-	-	-	-	18. 92
13. Lisbon	-	-	-	-	18. 94
14. Malaga, since 1666	-	-	-	-	18. 94
15. Bucellas	-	-	-	-	18. 49
16. Madeira, Red	-	-	-	-	22. 30
Do.	-	-	-	-	18. 40
Average	-	-	-	-	20. 35
17. Cape Muschat	-	-	-	-	18. 25
18. Cape Madeira	-	-	-	-	22. 94
Do.	-	-	-	-	22. 50
Do.	-	-	-	-	18. 11
Average	-	-	-	-	20. 51
19. Grape Wine	-	-	-	-	18. 11
20. Calcavella	-	-	-	-	19. 20
Do.	-	-	-	-	18. 10
Average	-	-	-	-	18. 65

21. Vidonia	-	-	-	-	19. 25
22. Alba Flora	-	-	-	-	17. 26
23. Malaga	-	-	-	-	17. 26
24. White Hermitage	-	-	-	-	17. 43
25. Rousillon	-	-	-	-	18. 13
Do.	-	-	-	-	17. 26
Average	-	-	-	-	18. 13
26. Claret, Chateau Margot	-	-	-	-	17. 11
Do.	-	-	-	-	16. 32
Do. Lafitte	-	-	-	-	14. 08
Do. Do.	-	-	-	-	12. 91
Average	-	-	-	-	15. 10
27. Malmsey Madeira	-	-	-	-	16. 40
28. Lunel	-	-	-	-	15. 52
29. Sheraaz	-	-	-	-	15. 52
30. Syracuse	-	-	-	-	15. 28
31. Sauterne	-	-	-	-	14. 22
32. Burgundy	-	-	-	-	16. 60
Do.	-	-	-	-	15. 22
Do.	-	-	-	-	14. 53
Do.	-	-	-	-	11. 95
Average	-	-	-	-	14. 57
33. Hock	-	-	-	-	14. 37
Do.	-	-	-	-	13. 00
Do. old, in Casks	-	-	-	-	8. 88
Average.	-	-	-	-	12. 08
34. Nice	-	-	-	-	14. 63
35. Barsac	-	-	-	-	13. 86
36. Tent.	-	-	-	-	13. 30
37. Champagne, Still	-	-	-	-	13. 83
Do. Sparkling	-	-	-	-	12. 80

Champaigne, Sparkling	-	-	-	12. 56
Do. Red	-	-	-	11. 30
Average	-	-	-	12. 61
38. Red Hermitage	-	-	-	12. 32
39. Vin de Grave	-	-	-	13. 94
Do.	-	-	-	12. 80
Average	-	-	-	13. 37
40. Frontignac	-	-	-	12. 79
41. Cote Rotie	-	-	-	12. 32
42. Gooseberry wine	-	-	-	11. 84
43. Orange wine	-	-	-	11. 26

*Average of six samples made by a London Manufacturer.*

44. Tokay	-	-	-	9. 88
45. Elder Wine	-	-	-	8. 79

*Other Fermented Liquors.*

1. Cider, highest average	-	-	9. 87
Do. lowest average	-	-	5. 21
2. Perry, average of 4 samples	-	-	7. 26
3. Mead	-	-	7. 32
4. Ale (Burton)	-	-	8. 88
Do. (Edinburgh)	-	-	6. 20
Do. (Dorchester)	-	-	5. 56
Average	-	-	6. 87
5. Brown Stout	-	-	6. 80
6. London Porter (average)	-	-	4. 20
Do. small Beer Do.	-	-	1. 28
7. Brandy	-	-	53. 39
8. Rum	-	-	53. 68
9. Gin	-	-	51. 60



10. Scotch Whiskey	-	-	-	54. 32
11. Irish Do.	-	-	-	53. 90
12. Hollands (genuine)	-	-	-	56. 00

## ESSENTIAL OILS AND FLAVOUR.

Wines though essentially the same in their general composition, are distinguished from one another principally by their flavour and odour, no less than by the portion of alcohol they may contain. Now their sensible properties evidently depend upon some volatile and fugacious principle, which has been considered to be analogous to an essential oil. This principle is sometimes derived immediately from the fruit, as for example, in the wines made from the Frontignac and Muscat grape; at other times it is the product of fermentation. Thus the finer flavours of Claret, Hermitage, and Burgundy, bear no resemblance to those of the grapes from whence they are formed. Very often as before stated, the principles of odour and flavour are communicated to wines artificially, by the introduction of foreign ingredients, as Orris root, grape and Elder flowers, mignonette, &c. The menstruum of this volatile principle is doubtless in most instances, the alcohol contained in wines; but its quantity is so minute as to be incapable of separation.

## REMARKS.

The vinous fermentation is influenced by several circumstances, such as temperature, presence of the air, &c. The must of the grape requires a temperature of at least  $55^{\circ}$  to enable it to commence the fermentative process. Some have denied that the presence of the air is necessary to fermentation. The recent experiments of Gay Lussac, however, seem to prove the reverse. This celebrated Chemist found that the must would not begin to ferment in close vessels, but that the introduction of a little Oxygen instantly set it a going; the oxygen being first rapidly absorbed. Perhaps we may explain the opposite conclusions of different experimentalists upon this subject, by supposing that the presence of oxygen, though necessary to enable the must to commence fermentation, is not necessary to support it afterwards. The fermentative process is much influenced by the bulk or quantity of must. It is a well established fact, that the greater the quantity the more violent is the fermentation. An experienced manufacturer of wine therefore, will take care to proportion the quantity of must to the quality of his fruit, or rather perhaps to that of the wine which it is his object to procure: the sweeter and more luscious the must, the greater the quantity in general, which it will be proper to submit to the fermentative process in one mass.

Other important circumstances which influence the fermentative process are the requisite quantities

and the relative proportions to one another of the necessary principles. The saccharine and fermentative principles, tartar and water are the principles (as explained under the article fermentation) essential to the production of wine. The sweetest do not always make the best wine, nor actually contain the greatest proportion of sugar, at least of real sugar, such as is proper for the formation of alcohol. An experienced taste, it is said, can readily distinguish between a really saccharine grape, and a sweet grape, and consequently pronounce a priori whether it be adapted to make a good wine or not. Pure saccharine matter, however, will not ferment alone, but require a certain proportion of other principles to put it in motion. When the must contains too large a proportion of water, the fermentative process is feeble, and the wine is consequently bad. The ancients obviated this as we before mentioned by boiling the must; a practice still sometimes followed in the northern districts, especially in wet seasons. The same object is gained also by drying the fruit; and sometimes by the introduction of lime into the vat. The juice of the grape always contains a certain proportion of tartar. This quantity is greater, in general, as the quantity of sugar is less. If the juice contain too large a proportion of sugar in relation to the tartar, it is customary to add a portion of the latter principle. On the contrary, if the saccharine principle be deficient, and the tartar in excess, sugar is to be added.

The fermentative process is accompanied by the production of heat, by the disengagement of carbonic acid gas, and the formation of alcohol. These phenomena have been already discussed under the article above alluded to. Another important circumstance, however, which takes place during this process, is the colouring of the must. The juice of the black grape, as well as of the white, is nearly colourless; and if the fermentation be not permitted to take place in contact with the husks or marc, a colourless wine is obtained in all cases. The colour of red wines is derived from the marc, by permitting the wine to ferment in contact with it, the colouring principle of the marc or husks being soluble in alcohol. Hence when alcohol begins to be developed by the fermentative process, it acts upon the colouring principle and dissolves it, and the must becomes coloured. The following are the principle facts connected with this part of the subject. The wine is more coloured the longer the fermentative process is continued, and vice versa. The wine is more coloured in proportion as the fruit is more ripe and less watery. Wine obtained by pressure is more coloured than other wine; and lastly wines manufactured in the south are in general deeper coloured than those produced in more northern districts.

Great attention and practical knowledge are required in managing the fermentation properly, as on this important process depends entirely the future qualities of the wine. The same fruit in

different seasons, and from various causes, requires to be managed differently ; and almost every kind of wine requires a different, and, in some cases, even an opposite mode of treatment. Thus the fine banquet of Burgundy is completely dissipated by a too violent or lasting fermentation ; while, on the contrary, the fermentation of the strong wines of Languedoc, celebrated chiefly for the quantity of alcohol which they contain, ought to be long and complete. In Champagne, as we formerly mentioned, they collect the fruit destined to form the white wines, while moist with dew or mist, on the contrary, in the manufacture of their red wines, they prefer fruit as dry as possible.

In the former case, the fermentative process is so languid, as often to require a gentle heat ; in the latter so violent, as to require to be moderated. Weak wines ought in general to be fermented in casks ; strong wines in the vat. No general rules, however, can be given that will apply in all instances ; but the process must be varied according to circumstances, and the judgment of the manufacturer.

The fermentative process, for obvious reasons, is most difficult to manage in northern districts, where the fruit is more imperfect. To encourage the process they sometimes introduce a little warm must to the bottom of the vat by means of a long funnel. They also agitate it frequently, and to preserve a due degree of temperature, cover the vat with blankets, or heat the room artificially.



The theory or rationale of the fermentative process has been explained, as far as it is known, we shall therefore pass it over here, and confine our attention to practical points only.

A most material point in the manufacture of wines is to know the precise moment when the fermentative process has been carried far enough, and the means necessary to prevent its getting farther than this point. In the wine countries almost every manufacturer boasts of his knowledge in these particulars, and often adopts different methods.

Chaptal lays down the following rules to be attended to.

1. The wine ought to ferment so much the less time as it contains less saccharine matter. Thus the light wines of Burgundy require to ferment no longer than from 6 to 12 hours.

2. The must ought to ferment a less time in the vat when it is intended to retain the carbonic acid gas, and make sparkling wines. In this case, the must is seldom left longer in the vat than 24 hours before it is put into casks ; and frequently it is put into the casks as soon as it is separated from the fruit ; by these means the fermentation is checked, and the carbonic acid gas prevented from escaping.

3. The fermentation ought to be of shorter duration, in proportion as it is the intention to obtain wines more free from colour. This should be, therefore, particularly attended to in the manufac-



ture of those wines where the absence of colour is an essential requisite.

4. The fermentative process is more active in warm weather, and when the mass is large, &c. than under the opposite circumstances ; and therefore, *ceteris paribus*, is sooner completed.

5. When the object is to preserve to the wine the original perfumed flavour of the grape, the fermentation requires to be checked sooner than under ordinary circumstances.

6. On the contrary, the fermentation requires to be continued longer in proportion as the must is more thick, and the saccharine matter more abundant.

7. It will require to be longer when the object is to manufacture wines for distillation.

8. It will be longer in cold weather, and especially if the fruit has been gathered on a cold day.

9. Lastly, it will be longer in proportion as it is the object to make a deeper coloured wine.

These principles steadily kept in view will perhaps be sufficient, with a little practice, to enable any person of ordinary knowledge and powers of observation to decide upon the important points in question.

Great care is requisite in the preparation of the casks for receiving the wine. When they are new, they will spoil its flavour if not prevented. For this purpose, boiling water holding salt in solution, is introduced into them, which is frequently agitated, and permitted to remain in them a long time.

After this they are to be washed out with a portion of boiling must in a state of fermentation, or sometimes with a little wine, &c. If the casks are old but sweet, the top is merely taken out, and the tartar removed; if the casks have acquired a bad odour, Chaptal recommends to commit them to the flames; for though it may be possible to cover in some degree their bad odours, yet they are very likely to reappear and spoil the wine.

## OF THE MANAGEMENT OF THE WINE IN THE CASKS.

This consists in a sort of fermentative process, to which the name of insensible fermentation has been applied. Almost immediately after the wine is introduced into the casks a scum begins to be formed upon its top, and escapes by the bung hole, which at first requires to be covered slightly only with a leaf or tile. In proportion as the fermentation subsides, the mass of wine diminishes in bulk; and they watch this cautiously, in order to supply its place from time to time with new wine, so as to keep the cask always full: this process is denominated filling up. In some districts they fill up every day during the first month, every other day during the second, and every 8 days afterwards, till the time of racking. This is the method they adopt with the wines of Hermitage. In Champagne they permit the wines to ferment in casks for 10 or

12 days, and when the ebullition has ceased, they close the bung hole, leaving, however, a small spigot hole by its side, which is permitted to remain for 8, or 10 days longer; after which they close this with a plug, in such a manner as to be able to open it at pleasure. When the bungs are introduced they fill up every 8th day, by the spigot, for 25 days. After this for every 15th day for 1 or 2 months during the whole time the wine remains in the cellar. When the season has been wet and unfavorable, and the wines want body, or when it has been dry and hot, and they are too rich, 25 days after they have been made, they roll the casks 5 or 6 times, in order to mix the grounds, and re-excite the fermentative process, and this they repeat every 8th day for a month.

The fermentation of the Champaigne wines, which are designed to be brisk and sparkling, is very long and tedious. It is generally understood that they will be sparkling, provided they are bottled between the vintage and the following May, and that the nearer the vintage the brisker they will be. It is however generally taken for granted, that they will be sufficiently sparkling if bottled about the middle of March. Wines begin to sparkle in about 6 weeks after they have been bottled; those, however, produced on mountains, become sparkling sooner than others. Wines bottled in June and July, will be very little sparkling, and quite still if bottled so late as October and November.

In Burgundy, after the fermentation has relaxed

in the cask, they put in a bung pierced with a small hole, in which they introduce a peg so that it can be removed at pleasure, in order to suffer the gas that may be extricated to escape. In the District of Bordeaux, they begin to fill up every 8 or 10 days after the wine has been introduced into the cask. A month after this they introduce the bung, and fill up every 8 days. At first they bung the casks loosely, and then fasten them down by degrees, without running any risk. The white wines are racked and sulphured in December, and these require much more care than the red wines, from their containing more sediment and their being more liable to become ropy. The red wines are not racked till towards February or March, and as these are much more apt to become sour than the white wines, they require to be kept in cooler cellars, during the summer. There are some who, after the second racking, turn the casks so as to place the bung on one side; and thus the casks being hermetically sealed, from their being no loss there is no need of filling up. They then rack off annually, at any time of the year they find it convenient.

An artificial Frontignac may be made, in which the proportion of sugar, or of malt spirits to the raisins is large, and the whole body weaker: the Muscadell flavour being communicated by an infusion of the flowers of meadow sweet. In the making of this artificial Frontignac, the ferment should be stopped, by closing the cask and adding the spirit, while a considerable degree of sweetness remains,

and the wine may be drank after it has been a little while in the bottles.

## CYPRUS WINE

May be imitated by the same means, using 3 or 4 pounds more of sugar than the quantity above prescribed.\* and stopping the fermentation while a considerable degree of sweetness remains.

## ARTIFICIAL MOUNTAIN

May be made by preserving a small degree of sweetness, giving the nut like flavour, and keeping the best kind of the above wine to a due age. The flavour may be obtained by the infusion of the florentine orris root, powdered, with a very small proportion of orange and lemon peel; and the wine may be rendered more dry or sweet by continuing the fermentation a greater or lesser time, and adding a corresponding proportion of malt spirits, when the fermentation is stopped sooner. The adding of some of the stony seeds of the raisins, well bruised, will give the nut like flavour, and the putting a part of the stalks will add a sharpness, found generally in this kind of wine.

The racy taste of canary, commonly called sack, may be counterfeited by the addition of a proper quantity of the juice of white currants, to the wine, made with a large proportion of sugar to the raisins,

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\* See the recipe from the Museum.



and left very sweet in the fermentation. But it is said that a spirit, distilled from the leaves of clary, and clean malt spirits, put to the wine, will give it a very strong resemblance of sack. It is said also that the juice of the bramble berries, added to the mixture of the wine before the fermentation, will give both the colour and flavour of claret, but in this case the quantity of raisins should be considerably diminished, and that of the sugar increased, as the fermentation must be continued till the sweetness be wholly destroyed.

Wines of this kind should be kept at least a year before they are drank.

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## RECEIPTS.

### ENGLISH CLARET.

Take six gallons of water, two gallons of cider, and eight pounds of Malaga raisins, bruised; put them all together, and let them stand close covered in a warm place for a fortnight, stirring it every other day very well. Then strain out the liquor into a clean cask, and put to it a quart of barberries, a pint of the juice of raspberries, and a pint of the juice of blackberries. Work it up with a little mustard seed, and cover it with a piece of dough three or four days by the fire side; then let it stand a week, and bottle it off. When it becomes fine and ripe, it will be like common claret.

## TO MAKE CHEAP AND WHOLESOME CLARET.

Take one gallon of the best cider and one gallon of good port wine, mix and shake them, bottle them and let them stand for a month. The best judges will not be able to distinguish them from good Bordeaux.

## FRONTIGNAC WINE.

Take six gallons of water, twelve pounds of loaf sugar, and six pounds of raisins of the sun, cut small ; boil these together an hour : then take of the flowers of elder, when they are falling and will shake off, the quantity of half a peck ; put them in the liquor when it is almost cold. The next day put in six spoonfulls of syrup of lemons, with four spoonfulls of ale yeast, and two days after put it into a clean cask, and bung it up. When it has stood two months, bottle it off.

## ENGLISH FRONTIGNAC WINE.

Boil eighteen pounds of white powdered sugar, in six gallons of water ; and two whites of eggs well beaten ; skim it, and put in a quarter of a peck of elder flowers ; do not keep them on the fire. When cool, stir it and put in six spoonfulls of lemon juice, four or five of yeast, and beat well into the liquor ; stir it well every day ; put six pounds of the best raisins, stoned, into the cask, and tun the

wine, stop it close, and bottle in six months. When well kept, this wine will pass very well for Frontignac.

### ANOTHER.

To six gallons of spring water, put six pounds of sun raisins cut small, and twelve pounds of fine sugar ; boil the whole together for about an hour and a half. When the liquor is cold, put half a peck of ripe elder flowers in, with about a gill of lemon juice, and half the quantity of ale yeast. Cover it up and after standing three days, strain it off. Now pour it into a cask that is quite clean, and that will hold it with ease, when this is done, put a quart of Rhenish wine to every gallon ; let the bung be put slightly in for twelve or fourteen days, and put it into a cool dry place for four or five months, till it is quite settled and fine, then bottle it off.

### ENGLISH CHAMPAIGNE.

Take three gallons of water and nine pounds of moist sugar, boil the water and sugar half an hour, scum it clean, and then pour the boiling liquor upon one gallon of currants, picked from the stalks, but not bruised ; and when cold, ferment it for two days with half a pint of good ale yeast ; afterwards pour it through a flannel bag, and put it into a clean cask, with half a pint of isinglass finings. When it has done working, stop it close for a month, and then

bottle it, putting into every bottle a very small lump of loaf sugar. This is an excellent wine, and has a beautiful colour.

## SECOND.

This wine has been imitated in England, with great success, by using gooseberries before they ripen, and supplying the want of saccharine matter, with loaf sugar.

In the province of Champagne, sugar is frequently added to the grapes, when they do not attain their maturity, for the preparation of the Champagne wine. Much of the wine which they export, is made in this way.

The imitation of it with green gooseberries and sugar, is as salutary, very palatable and attainable in this country.

## THIRD.

Dissolve three pounds of white sugar, in four quarts of water, boil it a quarter of an hour, skim it well, and let it stand until it is almost cold, then take four gallons of full ripe gooseberries, bruise them in a mortar, and put them into your vessel; then pour them in the liquor; let it stand two days, stirring it every four hours, steep half an ounce of isinglass chipped fine in a quart of brandy, two days: strain the wine through a flannel bag, into a cask; then beat the isinglass and brandy in a mor-

tar, with the whites of five eggs; whisk them together, half an hour, put it in the wine, and beat them altogether; close up the cask, and put clay over the cork; let it stand six months, then bottle it off for use; put in each bottle a small lump of sugar and two jar raisins.

This is a very rich wine and when kept in bottles two or three years, will very much resemble champagne.

#### FOURTH.

Take gooseberries before they are ripe, crush them with a mallet in a wooden bowl, and to every gallon of fruit put a gallon of water; let it stand two days, stirring it well; squeeze the mixture well with the hand through a hop sive; then measure the liquor, and to every gallon put two and a half pounds of loaf sugar; mix it well in the tub, and let it stand one day; put a bottle of the best brandy into the cask, which leave open for five or six weeks, taking off the scum as it rises; then make it up, and let it stand one year in the barrel before it is bottled.

The proportion of brandy to be used for this liquor, is one pint to every seven gallons.

#### FIFTH.

Take gooseberries not quite ripe, five pounds, grapes one pound, sugar three pounds, water eight pounds, stir them during four days, (the water



should be warm,) strain the liquor, then ferment, after which rack, and add half a gallon of brandy to thirty two gallons.

### ENGLISH PORT.

Take eight gallons of good port wine, and put it in a clean sixty-gallon cask, first fumed with a match : add to it forty gallons of good cider, and then fill the hogshead with French brandy. The juice of elder berries and sloes will give it the proper degree of roughness, and cochineal will communicate to it whatever colour is chosen.

N. B. In lieu of cider, use turnip juice, or rasiu cider ; and instead of French brandy, British spirits.

### IMITATION PORT.

Take six gallons of good cider, one and a half gallons of good port wine, one and a half gallons of the juice of elder berries, three quarts of brandy, and one and a half ounces of cochineal. This will produce nine and a half gallons.

Bruise the cochineal very fine, and put it with the brandy into a stone bottle ; let it remain at least a fortnight, shaking it well once or twice every day ; at the end of that time procure the cider, and put five gallons into a nine gallon cask, add to it the elder juice and port wine, then the brandy and cochineal. Take the remaining gallon of cider to rinse out the

bottle that contained the brandy ; and lastly pour it into the cask, and bung it down very close ; in six weeks it will be ready for bottling.

It is however sometimes not quite so fine as could be wished, in that case add two ounces of isinglass, and let it remain a fortnight or three weeks longer, when it will be perfectly bright : it would not be amiss, perhaps, if the isinglass mentioned was added to the wine before it was bunged down, it will tend very considerably to improve the body of the wine. If it should not appear sufficiently rough flavoured, add an ounce or an ounce and a half of alum, which will in most cases impart a sufficient astringency.

After it is bottled it must be packed in as cool a place as possible. It will be fit for using in a few months ; but if kept longer, it will be greatly improved.

### ENGLISH MOUNTAIN.

First pick out the largest stalks of your Malaga raisins, then chop them very small, and put five pounds to every gallon of cold spring water. Let them remain a fortnight or more ; then squeeze out the liquor, and put it into a proper cask, having been previously fumigated with a match. Let it remain unstopped till the hissing or fermentation has ceased ; then bung it up, and when fine bottle it off.

## TO MAKE IMITATION SHERRY.

Procure some raisins of the sun, let them be well washed and picked from the stalks ; to every pound thus prepared and chopped, add one quart of water which has been boiled and has stood till it is cold. Let the whole stand in the vessel for a month, being frequently stirred. Now let the raisins be taken from the cask, and let the liquor be closely stopped in the vessel. In the course of a month, let it be racked into another vessel, leaving all the sediment behind, which must be repeated till it becomes fine, when add to every ten gallons six pounds of fine sugar, and one dozen of Seville oranges, the rinds being pared very thin, and infused in two quarts of brandy, which should be added to the liquor at its last racking. Let the whole stand three months in the cask when it will be fit for bottling ; it should remain in the bottle for a twelve-month.

## ANOTHER IMITATION SHERRY.

Take white Havana sugar thirty pounds, water ten quarts, white tartar six ounces, boil the whole half an hour, skim it well and let it stand till cool ; then add eight gallons of strong kive or strong beer wort, from the vat while working, stir it well together, and let it stand till next day ; then put it in a clean and sweet cask, and add to it six pounds

of chopped raisins, one quart of French brandy, one and a half pounds of brown sugar candy, and two ounces of isinglass.

N B. after the wine is put in the cask, paste a piece of thin muslin over the bung hole, to keep out the dirt and flies, and when it has done working, which will be in about six weeks, bung it up close.

This is a most excellent wine and the best judges will not be able to distinguish it from real sherry ; but it should be kept at least six months in the cask, before it is fit for use, and the older it gets the better.

### IMITATION MADEIRA.

To make imitation madeira, proceed as in the imitation sherry. And to give it the flavour of madeira, when it is in the cask put in a couple of green citrons, and let them remain till the wine is bottled.

### ANOTHER,

In the Museum Rusticum we have the following directions for making raisin wine. Put thirty gallons soft water into a vessel at least one third larger than sufficient to contain that quantity ; and add to it one cwt. weight of Malaga raisins, grossly picked from their stalks. Mix the whole well together, and cover it partly with a linen cloth. When it has stood a little while in a warm

place, it will begin to ferment, and must be well stirred twice in twenty-four hours, for twelve or fourteen days. When the sweetness is nearly gone off, and the fermentation much abated, which will be perceived by the subsiding and rest of the raisins; strain off the fluid, pressing it first by the hand, and afterwards by a press, out of the raisins. Let this liquor be put into a sour wine cask, well dried and warmed, adding eight pounds of fine sugar, and a little yeast, and reserving a part of the liquor to be added from time to time, as the decline of the fermentation will give room. In this state the liquor must remain for a month with the bung hole open; and having filled the vessel with the reserved liquor, let it be closely stopped, and kept for a year or longer, and then bottled off. At the end of a year and a half it may be drank, but will improve for four or five years. If this wine be kept a long time, so that no sweetness remain, it will very much resemble madeira.

N. B. Some saving may be made in the expense, by diminishing the quantity of raisins and increasing that of sugar; or by diminishing the proportion of raisins and sugar, and adding clean malt spirits, when the bung of the cask is closed up. Any other raisins may be used as well as the Malaga; but the thinner the skins and the sweeter the pulp, the stronger will be the wine.



## ENGLISH SACK

To every quart of water put a sprig of rue, and to every gallon a handful of fennel roots; boil these half an hour, then strain it out; and to every gallon of this liquor put three pounds of honey. Boil it two hours, and scum it well, and when it is cold pour it off and tun it into a clean cask. Keep it a year in the cask, and then bottle it off. This is very good sack.

## RAISIN WINE.

Take the best Malaga raisins, pick out the large stalks, and have your water ready boiled; when cold, measure as many gallons as you design to make, and put it into a large tub, that you may have room to stir it. To every gallon of water put six pounds of raisins, and let it stand fourteen days, stirring it twice a-day. When you have strained it off, put it into your cask, reserving a sufficient quantity to keep it filled, as the liquor works over, which it will often do for two months or more. It must not be closed till the hissing or fermentation has ceased.

## SECOND.

Take two gallons of spring water, and let it boil half an hour; then put into a stein pot two pounds of raisins stoned, two pounds of sugar, and the rinds

of two lemons. Pour the boiling water on the above ingredients, and let it stand covered four or five days; then strain it out, and bottle it off. In about fifteen or sixteen days it will be fit for use. It is a very cool pleasant drink in hot weather.

### THIRD.

Take forty pounds of Malaga raisins in March, cut them slightly, and throw the stalks into two gallons of water; then taking this water in part, put the raisins into a cask with six gallons more of water and a pint of the best brandy. Stir it up with a stick once a day for a week, then close it well up; let it stand half a year, and then bottle it off.

### FOURTH.

To every gallon of water put five pounds of raisins, picked from the stalks, and pulled in two; let them steep a fortnight, stirring them every day; then pour off the liquor, and squeeze the juice out of the rasins. Put the liquor into a clean cask, that will just hold it, (for it must be quite full) and let it stand open till it has done working: then add a pint of French brandy to every two gallons, and stop it up close. Let it stand six months before you bottle it off; in doing which, do not draw it too near the bottom of the cask. January, February, and March, are the best months to make it, the fruit being then new.

## FIFTH.

Take three hundred pounds of Malaga raisins, not picked; put them into a hogshead of spring water, with one pound of hops; let it stand a fortnight, stirring it twice a day; then press it into a tub, and put to it a piece of bread toasted, and spread with yeast, and let it ferment twenty-four hours; afterwards put the liquor into a cask, where it may work fourteen days longer, fill it up again as it works over, and when it has ceased let it be well bunged up. You may afterwards put eighteen gallons of water upon the raisins, for small wine, and press it out in a week after. When it is about two months old, bottle it off.

## CURRANT WINE.

Take four gallons of currants, not too ripe, and strip them into an earthen stein with a cover to it; then take two gallons and a half of water, and five pounds and a half of good sugar; boil the sugar and water together and scum it well; then pour it boiling on the currants, and let it stand forty-eight hours; afterwards strain it through a flannel bag into the vessel again, and let it stand a fortnight to settle: then bottle it off.

## SECOND.

Gather your currants fully ripe, strip them and bruise them in a mortar, and to every gallon of

the pulp put two quarts of cold water, (which has been previously boiled ;) let it stand in a tub twenty-four hours to ferment, then let it run through a hair sieve, not using the hand to hasten it, but letting it run gently off. To every gallon of this liquor add two pounds and a half of loaf sugar ; stir it well, and then put it in your cask, adding to every six gallons a quart of the best rectified spirits of wine. Let it stand six weeks, and then bottle it. It will answer best at the first to draw it off into large bottles, and after it has stood a fortnight, to rack it off into smaller ones.

### THIRD.

Take your currants when they are fully ripe, strip and break them with your hands till all the berries are bruised, and to every quart of pulp put a quart of water. Mix them well together, and let them stand all night in your tub , then strain them through a hair sieve, and to every gallon of liquor add two pounds and a half of loaf sugar. When the sugar is dissolved, put it into the cask ; adding to it a little isinglass dissolved. To every four gallons put a quart of mountain wine ; then bung up your cask and when first draw it off and wash the cask with a little of the wine ; run the grounds through a bag, and put the whole into your cask again. To every gallon put half a pound more sugar, let it stand a month, then bottle it.

## FOURTH.

Currant wine is made from one gallon of pure juice, two and a half gallons of water, two and a half pounds of white Havana sugar, adding to the quarter cask half a gallon of brandy.

## FIFTH.

Take fourteen pounds of currants, when perfectly ripe, add three gallons cold water; break the currants into the cold water, and let them remain therein two or three days, and stir once a day; strain the liquor from the fruit and stalks, and add fourteen pounds of sugar, which being well mixed with the currant liquor, the whole may then be barrelled, and left fourteen days without the bung; after which bung it close, and bottle about Christmas, previously adding to every ten gallons one quart of brandy. The sugar should be of good quality, or honey may be used, adding about one third more in weight.

N. B. A small quantity of the outer rind of orange peel, will give it an agreeable flavour.

Sloes, bruised and infused in currant wine, impart a beautiful red colour, and a pleasant, rough, sub-acid taste, resembling that of port wine.



## SIXTH.

*Extracted from Transactions of the Philosophical Society of Philadelphia.*

Gather your currants full ripe; break them well in a tub or vat; press them and measure your juice; add two thirds water, and to each gallon of mixture, (juice and water) put three pounds of Muscovado sugar, the cleaner and drier the better; very coarse sugar clarified will do as well; stir it well till the sugar is dissolved, and then bung it up. Your juice should not stand over night, if you can help it, as it should not ferment before mixture. Observe that your cask be sweet and clean, do not be prevailed to add more than one third of juice, as above prescribed, for that would render it infallibly hard and unpleasant; nor yet a greater proportion of sugar, as it will certainly deprive it of its pure vinous taste. Fill your cask full, and leave a vent hole open. When the fermentation is over, stop it up tight, and in six months it will be fit for use: like other wines however, it will improve much by age.

## ORANGE WINE.

Take thirty pounds of new Malaga raisins, pick them clean from the stalks, and chop them small. Provide yourself twenty large Seville oranges, ten of which you must pare as thin as for preserving;

then boil about eight gallons of soft water, till a third part be consumed, and after letting it cool a little, pour five gallons of it upon your raisins and orange peel; then stir it well and cover it up. When cold, let it stand five days, stirring it once or twice a day. Run this liquor through a hair sieve, and with a wooden spoon press the pulp as dry as you can, then put it in a clean cask, adding the rinds of the other ten oranges, pared as thin as the first. The day before you tun it, make a syrup of the juice of the whole twenty oranges with a pound of white sugar. Stir them well together, and close it up: let it stand two months to fine, then bottle it off. It will keep three years, and improve in keeping.

## SECOND.

Take twelve gallons of water, and twenty pounds of sugar; boil it half an hour, skimming it all the time. Have in readiness the peels of an hundred oranges in a tub, so thinly pared that no white shall appear in them; then pour on your boiling water, and keep it close. You must use none of the seeds, but pick them carefully out, and when the liquor is milk warm add to it six spoonfulls of good ale yeast. Let it ferment for two days; then put it in a clean cask, with a gallon of white wine and a quart of brandy. Let it stand a month, and then bottle it off, putting a lump of loaf sugar into every bottle.

## THIRD.

Put twelve pounds of fine sugar, and the whites of eight eggs well beaten, into six gallons of spring water ; let it boil one hour, skimming it all the time. Then take it off, and when it is milk warm, add the juice and rinds of fifty Seville oranges, and six spoonfulls of good ale yeast. Let it stand two days ; then put it in your cask, with two quarts of vin degraw or bucella wine, and the juice of twelve lemons ; only observing, that you must let the juice of the lemons, the wine, and two pounds of loaf sugar, stand closely covered for ten or twelve hours before you put it in, taking care to scum of the seeds. The lemon peels must be put in with the oranges. Half the rinds must be put into the cask. It must stand ten or twelve days before you bottle it.

## GOOSEBERRY WINE.

To every four pounds of gooseberries take a pound and a quarter of sugar, and a quart of spring water ; bruise the berries, and let them lie twenty-four hours in the water, stirring them frequently ; then press out the liquor, and add your sugar to it ; afterwards put it into a good clean cask ; and when the fermentation has ceased, close it up and let it stand a month ; then rack it off into another cask, and let it stand five or six weeks longer. Bottle it off, putting a lump of sugar into every bottle.

## PEARL GOOSEBERRY WINE.

Take as many as you think proper of the best pearl gooseberries ; bruise them, and let them stand all night ; the next morning press or squeeze them out, and let the liquor stand seven or eight hours ; then pour off the clear juice from the sediment, and measure it as you put it into your cask, adding to every three pints of liquor a pound of loaf sugar broken into small lumps, together with a little fining. Close it up, and in three months bottle it off, putting into every bottle a lump of loaf sugar. This is a fine gooseberry wine.

## SECOND.

Boil eight gallons of water and one pound of sugar an hour ; scum it well, and let it stand till it is cold ; then to every quart of this liquor allow three pounds of gooseberries, first beaten or bruised very well. Let it stand twenty-four hours, then strain it out, and to every gallon add three pounds of moist sugar. Let this stand in the vessel twelve hours, then take off the thick scum, and put the clear liquor into a good clean cask, in which it must remain for a month. Then draw it off, and rinse the cask with some of the liquor ; after which, put it again into the cask, and let it stand four months. Then bottle it off.

## THIRD.

Take twenty-four quarts of gooseberries, fully ripe, and twelve quarts of water. First boil your water two hours; then pick your gooseberries, and bruise them in a platter with a rolling pin, as small as you can. Put the water when it is cold on the bruised gooseberries, and let them stand together twelve hours, and when you drain it off, be sure to take none but the clear liquor; afterwards measure the liquor, and to every quart add three quarters of a pound of loaf sugar, let it stand six or eight hours to dissolve, stirring it two or three times; then put it in your cask, with two or three spoonfuls of good ale yeast. Then put the bung in the hole lightly at first, that it may work; and when you see it has ceased to work, or if no fermentation appear, close it well up, and bottle it in frosty weather.

## FOURTH.

Take your gooseberries before they be over ripe; bruise them in a wooden vessel, but not too much, lest you bruise the seeds: then measure them, and to every gallon of bruised berries put two gallons of cold water; stir them well together, and let them stand a night and a day covered. Draw the liquor from the berries into a vessel, or if too thick, strain it through a bag: to every gallon of which add two pounds of loaf sugar dissolved; stir it well together, and put it into a cask;



then let it work for two days, and bung it up for a week ; afterwards draw it from the cask, and wash out the cask with a little of the liquor, and to every gallon add half a pound more of sugar. Stir it well up, and put it again into the cask. Then bung it up for a month, and it will be fit for bottling.

### FIFTH.

To every four pounds of gooseberries take a pound and a quarter of loaf sugar, and a quart of spring water ; bruise the berries, and let them stand in the water twenty-four hours, stirring them often ; then press out the liquor into a clean cask that it may ferment, and when it has ceased, close it up, and let it stand a month ; then rack it into another clean cask, for six or seven weeks longer ; after which bottle it off, and put a small lump of loaf sugar into each bottle. Cork them well, and then let them remain a quarter of a year before you drink it.

### COWSLIP WINE.

Take six gallons of water, and to every gallon add two pounds of loaf sugar ; boil it about an hour, and then let it cool. Toast a piece of bread, and spread both sides of it with yeast ; but before you put it into the liquor, add to every gallon one ounce of the syrup of citrons. Beat it well in with the rest, and then put in the toast while it is warm. Let it work

for two or three days ; in the mean time put in your cowslip flowers, bruised a little, about a peck together, with three lemons sliced, and one pint of white wine to every gallon. Let them stand three days, and afterwards put it into a good clean cask ; and when fine, bottle it.

## SECOND.

To six gallons of water add fourteen pounds of loaf sugar, and stir it well up together : beat the whites of twenty eggs very well, mix it with the liquor, and make it boil as fast as possible ; then scum it well, and let it continue boiling two hours ; afterwards strain it through a hair sieve, and set it to cool : when it is milk-warm put a small quantity of good ale yeast to it on a toast. Let it ferment all night, then bruise a peck of cowslip flowers, and put them into your vessel, after which pour the liquor upon them, and add six ounces of the syrup of lemons. Cut a tuft of grass and lay it on the bung hole ; let it stand a fortnight, and then bottle it.

N. B. Put the cock in the cask before you put the wine in, that you may not shake it.

## THIRD.

Take thirty gallons of water, and sixty pounds of sugar ; boil them together an hour, skimming it well ; then put it into a tub, and let it stand till it

is cold ; after which put in sixteen pecks of cowslip flowers, and the juice and rinds of two dozen of lemons pared very thin, a gill of good ale yeast, which you must also add at the same time. Let it be beaten three times a day, for three days together, then rack it into a good clean cask (cowslips and all) with two quarts of brandy. When the fermentation is over then bung it up close for three weeks, and bottle it off.

### PARSNIP WINE.

To twelve pounds of parsnips cut in slices, add four gallons of water, boil them until they are quite soft. Squeeze the liquor well out of them, run it through a sieve, to every gallon add three pounds of loaf sugar. Boil the whole for three quarters of an hour, and when it is nearly cold add a little yeast. Let it stand in a tub for ten days, stirring it every day from the bottom, then put it in a cask for twelve months, as it works over, fill it up every day.

### TURNIP WINE.

Pare and slice a number of turnips, put them into a cider press, and press out all the juice. To every gallon of the juice, add three pounds of lump sugar ; have a vessel ready, large enough to hold the juice, and put half a pint of brandy to every gallon. Pour the juice into a cask, and lay something over

the bung hole for a week, to see if it works ; if it does, do not bung it down till it has done working ; then stop it close for three months, and draw it off into another vessel. When it is fine, bottle it off.

This is an excellent wine for gouty habits, and is much recommended in such cases, in lieu of any other wine.

### ROSE WINE.

Take a well glazed vessel, and put into it three gallons of rose water drawn with a cold still. Put into that a sufficient quantity of rose leaves, cover it close, and set it for an hour in a kettle or copper of hot water, to take out the whole strength and tincture of the roses, and when it is cold, press the rose leaves hard into the liquor, and steep fresh ones in it, repeating it till the liquor has got the full strength of the roses. Then to every gallon of liquor put three pounds of loaf sugar ; and stir it well, that it may melt and disperse in every part. then put it into a cask to ferment, and put in a piece of bread toasted hard, and covered with yeast. Let it stand about thirty days, when it will be ripe, and have a fine flavour, having the whole strength and flavour of the roses in it ; and it will be greatly improved by adding to it wine and spices. By this method of infusion, wine of any other flowers may be made.

## ELDER WINE.

Take twenty-five pounds of Malaga raisins, and rub them small; then take five gallons of water, boil it an hour, and let it stand till it is milk-warm: afterwards put it into an earthen stein with your raisins, and let them steep ten days, stirring them twice a-day; then pass the liquor through a hair sieve, and have in readiness five pints of the juice of elderberries, drawn off as you do jelly of currants; then mix it cold with the liquor, stir it well together, and put it in a cask. Let it stand in a warm place; and when it has done working, stop it close, and bottle it about Candlemas, or in the month of February.

## SECOND.

Take spring water, and let it boil half an hour; then measure five gallons and let it stand to cool. Have in readiness twenty pounds of raisins of the sun, well picked and rubbed in a cloth; and chop them, but not too small: then put them in the water, when it is quite cold, and let them stand nine days, stirring them three or four times a day. Procure six pints of elderberries fully ripe, which must be infused in boiling water, or baked three hours in an oven; then strain out the raisins, and when the elder liquor is cold, mix that with it, (but the best way is to boil up the juice to a syrup,) and add four spoonfuls of good ale yeast. Stir it well



together, and then tun it into a good clean cask, and let it stand in a warm place to ferment ; after which put it in your cellar for five or six months, and bottle it off.

### THIRD.

Gather elderberries, ripe and dry ; pick and bruise them with your hands, and strain them ; then set the liquor in an earthen mug for one day, to settle ; and to every quart of juice add three pints of water, and to every gallon of this liquor put three pounds of sugar ; then set it on the fire in a brasskettle, and when it is boiling, clarify it with the whites of four eggs ; let it boil an hour, and when it is almost cold, ferment it with good ale yeast : afterwards tun it off, and fill up the cask, as it works out, with the same liquor. Should your cask hold about eight gallons, the wine will be fine in a month's time, and fit to bottle ; and it will be fit to drink in two months more. You may add to every gallon a pint of mountain wine.

### FOURTH.

To five gallons of water put five quarts of ripe elderberries, picked from the stalks ; let them boil a quarter of an hour, then strain the liquor through a sieve, and put it into your pan again, with fourteen pounds of good raw sugar ; let it boil half an hour, and then put into your tub three pounds of raisins, and pour the boiling liquor upon them.

When it is milk warm, put into it a little good ale yeast, and let it work three days ; then tun it and put five gills of brandy into the cask, and bottle it at Christmas.

### FIFTH.

Take twelve and a half gallons of the juice of ripe elderberries, and thirty-seven and a half gallons of water, that has been recently boiled, and to every gallon of water, add three and a half pounds of sugar, or four and a half pounds of Havana honey, which will incorporate whilst warm ; add of ginger half an ounce, and pimento three quarters of an ounce to every four gallons of the mixture ; and when the whole is nearly cool, add about half a pint of brewer's yeast, and let it ferment slowly, for about fourteen days, the bung of the cask being out ; then bung it close and let it stand for six months, when it will be fit to bottle off.

### SIXTH.

Pick the elderberries when fully ripe ; put them into a stone jar, and set them into the oven, or a kettle of boiling water, till the jar is thoroughly hot, then take them out and strain them through a coarse cloth, wring the berries, and put the juice into a clean kettle, to every quart of juice put a pound of fine dry sugar ; let it boil, and skim it well ; when it is clear and fine pour it into a jar ; when cold

cover it close, and keep it till you make raisin wine ; and to every gallon of wine put half a pint of elder syrup.

### ELDER FLOWER WINE.

To twelve gallons of water put thirty pounds of good sugar : boil it half an hour, skimming it well all the time : let it stand till milk warm, and then put in three spoonfuls of yeast, and after it has worked, add two quarts of flowers picked from the stalks : stir it every day till the fermentation has ceased, and then strain it through a hair sieve, and put it into a clean cask, which must be afterwards bunged close up. Let it stand two months, then bottle it.

### SECOND.

Take two large handfuls of dried elder flowers, and ten gallons of spring water : boil the water, and pour it scalding hot upon the flowers ; the next day put to every gallon of water, five pounds of Malaga raisins, the stalks being first picked off, but not washed : chop them a little, and put them into your water, stirring the water, raisins, and flowers, well together : repeat this twice a day for twelve days, then press out the liquor as long as you can get any ; afterwards put it into a clean cask, and close it up for two or three days, till it ferments, and in a few days after bung it up, and let it stand three or four months, till it is clear : then bottle it.

### WHITE MEAD WINE.

Take of cold soft water, seventeen gallons, white currants, six quarts. Ferment. Mix honey, thirty pounds, white tartar, in fine powder, three ounces. Add balm and sweet briar, each two handfuls, white brandy one gallon. This will make eighteen gallons.

### RED MEAD WINE.

Take of cold soft water, seventeen gallons, red currants six quarts, black currants, two quarts. Ferment. Mix honey twenty-five pounds, beet root, sliced, one pound, red tartar in fine powder, four ounces. Add cinnamon, in powder, two ounces, brandy one gallon. This will make eighteen gallons.

### ANOTHER

Fermented mead wine, is made in the proportion of one pound of honey to three pints of water; or by boiling over a moderate fire, to two thirds of the quantity. three parts water and one part honey. The liquor is then skimmed and casked, care being taken to keep the cask full while fermenting. During the fermenting process, the cask is left unstopped and exposed to the sun, or in a warm room, until the working cease. The cask is then bunged, and a few months in the cellar, renders it fit for use.

Mead is rendered more vinous and pleasant, by the addition of cut raisins, or other fruits, boiled after the rate of half a pound of raisins to six pounds of honey, with a toasted crust of bread, an ounce of salt of tartar in a glass of brandy, being added to the liquor when casked ; to which some add five or six drops of the essence of cinnamon, other acid pieces of lemon peel with various syrups.

### DAMSON WINE.

Gather the fruit dry, weigh them, and bruise them with your hands : put them into an earthen stein with a faucet, having a wad of straw before the faucet ; and to every eight pounds of fruit add one gallon of water. Boil the water ; then pour it upon your fruit scalding hot, and let it stand two days ; afterwards draw it off, and put it into a clean cask, and to every gallon of liquor add two pounds and a half of good sugar : let the cask be full, and the longer it stands the better. It will keep very well a year in the cask ; afterwards bottle it off. The small damson is the best. You may put a very small lump of loaf sugar into every bottle ; it will be much improved by it.

### SECOND.

Take two pounds and a half of sugar to every gallon of water ; boil and skim it for two hours, and to every gallon of liquor add five pounds of dam-



sons stoned : boil them till they are of a good red colour ; then strain the liquor through a sieve, and ferment it in an open vessel for four days ; after which pour it off from the lees, clean the vessel, and then put in the liquor to finish the fermentation. Close it well up for six or eight months, and if it be fine, you may bottle it off. It may be kept a year or two in bottles, and will be the better for it.

### THIRD.

To four gallons of water put sixteen pounds of Malaga raisins, and half a peck of damsons, in a tub : cover it, and let it stand six days : stir it twice every day, then draw off the liquor, and colour it : Afterwards tun it into a cask, bung it up for a fortnight, and then bottle it.

### APPLE WHITE WINE.

Take of cold soft water, two gallons, apples, well bruised, two bushels ; honey ten pounds, white tartar, two ounces, one nutmeg in powder, rum two quarts, this will make eighteen gallons.

### APPLE WINE.

To every gallon of apple juice, immediately as it comes from the press, add two pounds of loaf sugar, boil it as long as any scum arises, then strain it through a sieve, and let it cool ; add some good

yeast, and stir it well ; let it work in the tub two or three weeks, or till the head begins to flatten ; then skim off the head, draw it close off, and tun it. When made a year, rack it off and fine it with isinglass ; then add half a pint of the best rectified spirit of wine, or a pint of French brandy, to every eight gallons.

### APPLE RED WINE.

Take of cold soft water two gallons, of apples well bruised two bushels. Ferment. Mix raw sugar fifteen pounds, beet root sliced four pounds, red tartar three ounces, then add ginger in powder three ounces, rosemary and lavender leaves, of each two handfulls, British spirits, two quarts. This will make eighteen gallons.

### CHERRY WINE

Pull off the stalks of the cherries, and mash them without breaking the stones ; then press them well through a hair sieve, and to every gallon of liquor add two pounds of sugar : then tun it into a clean cask till it is filled, and suffer the liquor to ferment as long as it makes any noise in the cask. Afterwards bung it up close for a month or more, if not fine. When fine, bottle it off, putting a lump of loaf sugar into every bottle ; but should the fermentation be too violent, you must draw the cork out for awhile ; then cork them again, and it will be fit to drink in a quarter of a year.

### MORELLO CHERRY WINE.

Cleanse from the stalks sixty pounds of Morrello cherries, and bruise them so that the stones shall be broken. Now press out the juice and mix it with six gallons of Sherry wine, and four gallons of warm water. Having grossly pounded an ounce each of nutmeg, cinnamon and mace, hang them separately in small bags, in the cask containing the mixture. Bung it down, and in a few weeks it will become a deliciously flavoured wine.

### BLACK CHERRY WINE.

Take six gallons of spring water, and boil it an hour: then take twenty-four pounds of black cherries, and bruise them, taking care not to break the stones: pour the boiling water upon the cherries, and stir them well together: and after they have stood twenty-four hours, strain out the liquor through a cloth; and to every gallon add two pounds of sugar; then mix it well, and let it stand a day longer. Pour off the clear liquor into a cask, and keep it close bunged; and when it is very fine, bottle it off for use.

### STRAWBERRY, RASPBERRY, AND CHERRY WINE.—*A different way.*

Bruise your strawberries or raspberries, put them into a linen bag, and press out the juice into a

cask : then draw off the fine liquor into a clean cask, and bung it close for forty-eight hours : after which give it vent, and in two days time bung it well up again. In three months it may be bottled.

### PEACH WINE.

Take of cold water eighteen gallons, refined sugar twenty-five pounds, honey six pounds, white tartar in fine powder two ounces, peaches sixty or eighty in number. Ferment. Then add two gallons of brandy. This will make eighteen gallons.

The first is to be put into the vat, and the day after, before the peaches are put in, take the stones from them, break them and the kernels, then put them and the pulp into the vat, and proceed with the general process.

### PEACH AND APRICOT WINE

Take peaches, nectarines, &c. Pare them and take the stones out ; then slice them thin, and pour over them from a gallon to two gallons of water, and a quart of white wine. Place the whole on a fire to simmer gently for a considerable time, till the sliced fruit becomes soft, pour off the liquor into another vessel containing more peaches, that have been sliced, but not heated, let them stand for twelve hours ; then pour of the liquid part, and press what remains through a fine hair bag. Let the whole now be put into a cask to ferment, add

of loaf sugar a pound and a half to each gallon. Boil well an ounce of beaten cloves in a quart of white wine, and add it to the above.

Apricot wine may be made by only bruising the fruit, and pouring the hot liquor over it. This wine does not require so much sweetening; to give it a curious flavour, boil an ounce of mace and half an ounce of nutmegs in a quart of white wine, and when the wine is fermenting pour the liquor in hot. In about twenty days or a month, these wines will be fit for bottling.

### RASPBERRY WINE.

Pound your fruit, and strain it through a cloth: then boil as much water as there is juice, and when cold, pour it on the dry strained fruit, letting it stand five hours: after which strain it again, and mix it with the juice. To every gallon of this liquor add two pounds and a half of sugar, let it stand in an earthen vessel close for a week; then tun it into a clean cask, and let it stand well bunged up, for a month, or till it is fine. Afterwards bottle it off.

### SECOND.

Take four gallons of raspberries, and put them in a large earthen jar; then take four gallons of water, and boil it two hours: let it stand till it is milk-warm, and pour it upon the raspberries: stir them



well together, and let it stand twelve hours ; then strain it off. and to every gallon of liquor add three pounds of loaf sugar ; after which set it over a clear fire, and let it boil till all scum is taken off, and when cold, put it into bottles, opening the corks every day for a fortnight ; then stop them close.

N. B. The corks are not to be drove in till the last time.

### THIRD.

Take of cold soft water six gallons, cider six gallons, raspberries six gallons, any other fruit two gallons. Ferment. Mix raw sugar, eighteen or twenty pounds. Red tartar in fine powder, two ounces, orange and lemon peel dry, two ounces, or four ounces fresh, then add brandy two quarts. This will make eighteen gallons.

### FOURTH.

Gather the raspberries when ripe, husk them, and bruise them, then strain them into jars, or other vessels, boil the juice, and to every gallon put a pound and a half of lump sugar. Now add whites of eggs, and let the whole boil for fifteen minutes ; stirring it as the froth rises. When cool and settled decant the liquor into a cask, adding yeast to make it ferment. When this has taken place add a pint of white wine or half a pint of proof spirit to each gallon contained in the cask, and hang a

bag in it containing an ounce of bruised mace. In three months, if kept in a cool place, it will be very excellent and delicious wine.

### QUINCE WINE.

Take your quinces when they are fully ripe, and wipe off the fur very clean : then take out the cores, bruise them as you do apples for cider, and press out the juice : to every gallon of which, add two pounds and a half of loaf sugar : stirring it together till the sugar is dissolved ; afterwards put it into your cask, and when the fermentation is over, bung it up well. Let it stand till March before you bottle it. This wine will improve by being kept two or three years.

### SECOND.

Take twenty large quinces (gathered dry) and clean them with a coarse cloth ; then grate them as near the core as you can, taking care not to grate any of that in, if you can help it. Boil one gallon of spring water, and put your grated quinces into it ; after which, let it boil gently a quarter of an hour, and then strain the liquor into an earthen vessel. To every gallon of the liquor add two pounds of loaf sugar, stirring it till the sugar is dissolved ; then cover it up close, and let it stand twenty-four hours ; after which bottle it off, taking care that none of the sediment goes into the bottles. Your quinces must be fully ripe.

## THIRD.

Take your quinces, clean them with a coarse cloth, and grate them thin: press them through a linen bag, and to every gallon of the liquor put two pounds of loaf sugar. When the sugar is dissolved, pour it off as often as there appears any sediment; and when it is fine, put it into a cask, letting it remain a week unstopped; then bung it up close for six months: and if it is then fine, you may bottle it; but if not, you must draw it into another cask, and bung it up again until it is fine.

## BLACK CURRANT WINE.

Take of cold soft water ten gallons, black currants six gallons, strawberries three gallons. Ferment. Mix raw sugar twenty-five pounds, red tartar in fine powder, six ounces, orange thyme two handfuls; then add brandy two or three quarts. This will make eighteen gallons.

## ANOTHER.

Take of cold water twelve gallons, black currants five gallons, white or red currants, or both, three gallons. Ferment. Mix raw sugar, thirty pounds or less, red tartar in fine powder, five ounces, ginger in powder five ounces, then add brandy one gallon or less. This will make eighteen gallons.

## USEFUL RECEIPT FOR MAKING FAMILY WINES.

*From Nicholson's Journal.*

Take black currants, red ditto, white ditto, ripe cherries, (black hearts are the best,) raspberries, each an equal or nearly equal quantity : if the black currants be the most abundant, so much the better. To four pounds of the mixed fruit, well bruised, put one part of clear soft water ; steep three days and nights, in open vessels, frequently stirring up the mass ; then strain through a hair sieve ; the remaining pulp press to dryness ; put both liquids together, and to each gallon of the whole, put three pounds of good, rich, moist sugar, of a bright yellowish appearance. Let the whole stand again three days and nights, frequently stirring up as before, after skimming off the top. Then tun it into casks, and let it remain full and purging at the bung hole about two weeks. Lastly, to every nine gallons put one quart of good brandy, and bung down, if it does not drop fine, a steeping of isinglass may be introduced and stirred into the liquid in the proportion of about half an ounce to nine gallons.

N. B. Gooseberries, especially the largest and rich flavoured, may be used in the mixture to great advantage ; but it has been the best way to prepare them separately, by more powerful bruising or pounding, so as to form the proper consistence in

the pulp; and by putting six quarts of fruit to one gallon of water, pouring on the water at twice, the smaller quantity at night, and the larger the next morning. This process finished as aforesaid will make excellent wine unmixed; but this kind added to the former mixture, will sometimes improve the compound.

### SAGE WINE.

Boil six gallons of spring water a quarter of an hour, let it cool till it is milk-warm, and put in twenty-five pounds of Malaga raisins, picked and rubbed clean, and cut small, together with half a bushel of red sage cut small, and a gill of good ale yeast; stir them all well together, and let them stand covered in a warm place six or seven days, stirring them once a-day. After which strain the liquor into a clean cask, and when it has worked three or four days, bung it up, and let it stand about a week longer; then put into it two quarts of mountain wine, with a gill of finings, and when fine, bottle it off.

### SECOND.

Take twenty pounds of Malaga raisins, picked clean and cut small, and one bushel of green sage cut small; then boil six gallons of water, letting it stand till it is milk-warm: after which, you must pour it into a tub upon your sage and raisins, and let it stand five or six days, stirring it twice a-day:



then strain out the liquor from the pulp, put it into a cask, and let it stand six months. Afterwards draw it clear off into another cask, and bottle it when fine. In two months it will be fit for use, but will improve by being kept a year.

### WALNUT MEAD WINE.

To every gallon of water, put three pounds and a half of honey, and boil them together three quarters of an hour. Then to every gallon of liquor, put about two dozen of walnut leaves, pour the boiling liquor upon them, and let them stand all night. Then take out the leaves, and put in a spoonful of yeast, and let it work for two or three days. Then close it up, and after it has stood for three months bottle it.

### AMERICAN HONEY WINE.

Put a quantity of the comb from which honey has been drained, in a tub, and add a barrel of cider immediately from the press; stir the mixture, and leave it for one night. It is then strained before fermentation, and honey added until the specific gravity of the liquor is sufficient to bear an egg. It is then put into a barrel, and after the fermentation is commenced, the cask is filled every day for three or four days, that the froth may work out of the bung hole. When the fermentation moderates put the bung in loosely, lest stopping it tight might

cause the cask to burst. At the end of five or six weeks, the liquor is to be drawn off into a tub, and the whites of eight eggs well beaten up, with a pint of clean sand, are to be put into it, then add a gallon of cider spirit; and after mixing the whole together, return it into the cask, which is to be well cleaned, bunged tight, and placed in a proper situation for racking off, when fine, in the month of April following, draw it into kegs, for use; and it will be equal to almost any foreign wine.

### APRICOT WINE.

Take twelve pounds of apricots when nearly ripe, wipe them clean, and cut them in pieces; then put them into two gallons of water, and let them boil till the water has strongly imbibed the flavour of the fruit; then strain the liquor through a hair sieve, and put in every quart of liquor six ounces of loaf sugar; after which boil it again, and skim it; and when the scum has ceased to rise, pour it into an earthen vessel. The next day bottle it off, putting a lump of sugar in every bottle.

### ANOTHER.

Boil together three pounds of sugar, and three quarts of water, and skim it well; put in six pounds of apricots pared and stoned, and let them boil till they become tender. Then take them up, and when the liquor becomes cold, bottle it. After taking

out the apricots, let the liquor be boiled with a sprigg of flowered clary. The apricots will make marmalade, and be very good for present use.

### BARLEY WINE.

Boil half a pound of fresh barley in three waters, and save three pints of the last water. Mix it with a quart of white wine, half a pint of borage water, as much clary water, a little red rose water, the juice of five or six lemons, three quarters of a pound of fine sugar, and the thin yellow rind of a lemon. Mix all these well together, run it through a strainer and bottle it : It is pleasant in hot weather, and very good in fevers.

### SYCAMORE WINE.

Boil two gallons of the sap half an hour, and then add to it four pounds of fine powdered sugar. Beat the whites of three eggs to froth, and mix them with the liquor ; but take care that it is not too hot, as that will poach the eggs ; skim it well and boil it half an hour. Then strain it through a hair sieve, and let it stand till next day. Then pour it clean from the sediment, put half a pint of yeast to every twelve gallons, and cover it close up with blankets. Then put it into the barrel, and leave the bung hole open till it has done working. Then close it up well, and after it has stood two months, bottle it. The fifth part of the sugar

must be loaf; and if raisins are liked they will be a great addition to the wine.

### BALM WINE.

Take a bushel of balm leaves, put them in a tub, and pour eight gallons of scalding water upon them; let it stand a night, then strain it through a hair sieve, and put to every gallon of liquor two pounds of loaf sugar, stirring it very well till the sugar is dissolved; then put it on the fire, adding the whites of four eggs well beaten. When the scum begins to rise, take it off; then let it boil half an hour, skimming it all the time; afterwards, put it into the tub again, and when milk-warm add a gill of good ale yeast, stirring it every two hours. Work it thus for two days, then put it into a cask and bung it up. When fine bottle it off.

### ANOTHER.

Take forty pounds of sugar, and nine gallons of water, boil it gently for two hours, skim it well, and put it into a tub to cool. Take two pounds and a half of the tops of balm, bruise them, and put them into a barrel, with a little new yeast; and when the liquor is cold, put it on the balm. Stir it well together and let it stand twenty-four hours, stirring it often. Then close it up and let it stand six weeks. Then rack it off and put a lump of sugar into every

bottle. Cork it well and it will be better the second year than the first.

### MULBERRY WINE.

Gather your mulberries when they are ripe, beat them in a mortar, and to every quart of berries put a quart of spring water. When you put them into the tub mix them very well and let them stand all night; then strain them through a sieve, and to every gallon of liquor put three pounds of sugar: when your sugar is dissolved, put it into your cask, into which (if an eight-gallon one) you must put a gill of finings. Care must be taken that the cask be not too full, nor bunged too close at first. Set it in a cold place, and when fine, bottle it.

### ANOTHER.

On a dry day gather mulberries, when they are just changing from redness to a black; spread them thinly on a fine cloth or on a floor table, for twenty-four hours; and then press them. Boil a gallon of water with each gallon of juice; put to each gallon of water an ounce of cinnamon bark, and six ounces of sugar candy finely powdered. Skim and strain the water, when it is taken off and settled, and put to it the mulberry juice. Now add to every gallon of the mixture a pint of white or Rhenish wine. Let the whole stand in a cask to ferment, for five or six days. When settled, draw it off into bottles, and and keep it cool.



**BLACKBERRY WINE.**

Take blackberries when they are fully ripe, bruise them, and put to every quart of berries a quart of water; mix them well, and let them stand all night; then strain them through a sieve, and to every gallon of liquor add two pounds and a half of sugar. When your sugar is dissolved put it into your cask; to every twenty gallons of which add a gill of finings, and the next day bung it up. In two months bottle it off.

**ANOTHER.**

Having procured berries that are fully ripe, put them into a large vessel of wood or stone, with a cock in it, and pour on them as much boiling water as will cover them; as soon as the heat will permit the hand to be put into the vessel, bruise them well till all the berries are broken. Then let them stand covered till the berries begin to rise to the top, which they usually do in three or four days. Then draw off the clear into another vessel, and add to every ten quarts of the liquor, a pound of sugar. stir it well and let it stand to work, a week or ten days, in another vessel like the first. Then draw it off through a jelly bag into a large vessel. Take four ounces of isinglass, and lay it to steep twelve hours, in a pint of white wine. The next morning boil it on a slow fire, till it is all dissolved. Then

take a gallon of blackberry juice, put in the dissolved isinglass, give them a boil together, and pour all into the vessel. Let it stand a few days to purge and settle, then draw it off, and keep it in a cool place.

### GINGER WINE.

Take four gallons of water and seven pounds of sugar, boil them half an hour, skimming it all the time: when the liquor is cold squeeze in the juice of two lemons; then boil the peels with two ounces of white ginger, in three pints of water, one hour; when cold put it altogether into the cask, with one gill of finings and three pounds of Malaga raisins; then close it up, let it stand two months, and then bottle it off.

### SECOND.

Take seven gallons of water, twelve pounds of sugar, half a pound of white ginger, bruised, and the whites of four eggs, well beaten; put them in the water, and set it on the fire; when it boils skim it well, and after it has boiled a quarter of an hour, take it off; when cold put it in an open vessel, and take seven lemons, pare them, and squeeze in the juice, adding also the rinds; then put to it a gill of good ale yeast, and let it work for twenty-four hours: afterwards draw it off, put it into your cask, and in a fortnight, if fine, you may bottle it off.

### THIRD.

Take sixteen quarts of water, boil it, add one pound of bruised ginger, infuse it in the water for forty-eight hours, placed in a cask in some warm situation, after which time strain off this liquor, add to it eight pounds of lump sugar, seven quarts of brandy, the juice of twelve lemons, and the rinds of as many Seville oranges; cut them, steep the fruit and the rinds for twelve hours, in the brandy, strain your brandy, add it to your other ingredients, bung up your cask, and in three or four weeks it will be fine; if it should not, a little dissolved isinglass will soon make it so.

### SPRUCE WINE.

For this, which is only a superior sort of white spruce beer, proceed as follows. To every gallon of water take one and a half pounds of honey, and half a pound of fine starch. The starch however, previously to its being blended with the honey, liquor, or syrup, must be reduced to a transparent jelly, by boiling it with part of the water purposely preserved. A quarter of a pound of essence of spruce, may be used to six gallons of water, and the same method may be pursued in working, fining, and bottling, as directed for white spruce beer.

Spruce is a wholesome and pleasant drink to those

who are used to it, and persons soon become habituated. It contains a vast quantity of fixed air, which is extremely bracing; and the use of this liquor is particularly to be recommended to such as are troubled with scorbutic humors, or have the gravel, it is chiefly used in summer.

### BIRCH WINE.

In March bore a hole in a birch tree, a foot from the ground, into which put a faucet, and the liquor will run for two or three days together, without injuring the tree; then stop up the hole with a peg. (The next year you might draw as much more from the same hole.) To every gallon of liquor put a quart of honey, or two pounds and a quarter of sugar, and stir it well together: boil it for an hour, and skim it all the time, adding a few cloves and a piece of lemon peel; when it is almost cold, put to it as much good yeast as will make it work like ale, and when the yeast begins to settle, get your cask, and after you have fumigated it with a match, put in your liquor. For twenty gallons put in a gill of finings and the whites and shells of four eggs; stir it briskly with a staff, and let it stand six weeks or longer, then bottle it, and in two months it will be fit for use; but will greatly improve by time, and will drink better at the end of the second year than the first.

## SECOND.

The vernal sap of the birch tree is made into wine. In the beginning of March, while the sap is rising, holes must be bored in the body of the tree, and faucets made of elder, placed in them, to convey away the liquid. If the tree be large it may be tapped in several places at a time, and thus, according to the number of trees, the quantity of liquor is obtained. The sap is to be boiled with sugar, in the proportion of four pounds to a gallon, and treated in the same manner as other made wines.

## LEMON WINE.

Take six large lemons, pare off the rinds, cut them and squeeze out the juice, in which steep the rinds, adding to it a quart of brandy, and letting it stand in an earthen pot close stopped, for three days; then squeeze six lemons more, and to the juice put two quarts of spring water, and as much sugar as will sweeten the whole; then boil the water, sugar, and lemons together, and let it stand till cold; to which add a quart of white wine and the first mentioned lemons and brandy; mix them together, and strain the whole through a linen bag into your vessel; then let it stand three months, and bottle it off; taking care to cork and wire your bottles very well. Keep it in a cool place, or in sand, and it will be fit to drink in two months' time.



**ANOTHER.**

Pare five dozen of lemons very thin, put the peels into five quarts of French brandy, and let them stand fourteen days. Then make the juice into a syrup with single refined sugar, and when the peels are ready, boil fifteen gallons of water with forty pounds of single refined sugar, for half an hour. Then put it into a tub, and when cool add to it one spoonful of yeast, and let it work two days. Then tun it, and put in the brandy, peels, and syrup, stir them all together, and close up the cask. Let it stand three months, then bottle it, and it will be as pale and as fine as any citron water.

**CLARY WINE.**

Take twenty-four pounds of Malaga raisins ; pick and chop them very small, then put them into a tub, and to each pound allow a quart of water : let them steep twelve days, stirring them twice a-day, and take care to keep it well covered all the time ; then strain it off, and put it into a clean cask, with about half a peck of the tops of clary, when in blossom ; afterwards close it well up for six weeks, and then bottle it off. In two months, it will be fit to drink. As there will be a good deal of sediment, it will be necessary to tap it pretty high.

**SECOND.**

Take ten gallons of water, twenty-five pounds of sugar, and the whites of twelve eggs well beaten ; set it over the fire, and let it boil gently for an hour, skimming it clean all the time : then put it into a tub, and when almost cool, put it into your cask, with about half a peck of clary tops and a pint of new yeast. Stir it three times a-day, for three days, and when it has done working, close it up : if fine, you may bottle it in about four months.

**JUNIPER BERRY WINE.**

Take of cold soft water eighteen gallons, Malaga or Smyrna raisins thirty-five pounds, juniper berries nine quarts, red tartar four ounces, wormwood and sweet marjoram, each two handfuls, British spirit two quarts or more. Ferment for ten or twelve days. This will make eighteen gallons.

**SCURVY GRASS WINE.**

Scurvy grass or spoon wort, is a very sovereign medicinal herb, appropriated chiefly to the health of invalids. Take the best large scurvy grass, tops and leaves, in May, June, or July, bruise them well in a stone mortar ; then put them in a well glazed earthen vessel, and sprinkle them over with some powder of chrystals of tartar ; then smear them with some virgin honey, and being covered close

let them stand twenty-four hours ; then set water over a gentle fire, putting to every gallon three pints of honey, and when the scum rises, take it off and let it cool ; then put the stamped scurvy grass into a barrel, and pour the liquor to it, setting the vessel conveniently, end ways, with a tap at the bottom. When it has been infused twenty-four hours, draw off the liquor, and strongly press the juice and moisture out of the herb into the barrel or vessel, and put the liquor up again ; then put a little new yeast to it, and suffer it to ferment three days, covering the place of the bung with a piece of bread spread over with mustard seed, downward, in a cool place, and let it continue till it drinks fine and brisk, then draw off the finest part, leaving only the dregs behind ; afterward add more herbs, and ferment it with whites of eggs, flour, and fixed nitre, verjuice, or the juice of green grapes, if they are to be had ; to which add six pounds of the syrup of mustard, all mixed and well beaten together, to refine it down, and it will drink brisk ; but it is not very pleasant, being here inserted among artificial wines rather for the sake of health, than for the delightfulness of its taste.

### WINE OF ENGLISH GRAPES,

When the vines are well grown, so as to bring full clusters, be careful to take off some part of those leaves which too much shade the grapes, but not in the hot season, lest the sun should too swiftly

draw away their juices, and wither them. Stay not till they are all ripe at once, for then some will be over ripe, and bruise or rot before the underlings come to perfection, but every two or three days pick off the choice or ripest grapes, and spread them in a dry shady place, that they may not be burst by the heat. Thus those that remain on the vine, having more heat to nourish them, will grow larger and be sooner ripe; and when you have got a sufficient quantity, put them into an open vessel, and bruise them well with your hands; or if the quantity be too great, get a flat piece of wood, fasten it to the end of a staff, and gently press them with it, taking care to break the stones as little as possible, as that would give the wine a bitter taste. Having bruised the grapes so that they become a pulp, you must have a tap at the bottom of your cask; then tie a hair cloth over your receiving tub, and let that out which will run off itself, which will be found to be the best; then take out the pulp, and press it by degrees till the liquor is sufficiently drained off; after which get a clean cask well matched, and pour the liquor in through a sieve and funnel, to stop the dregs, letting it stand with a slate over the bung hole, to ferment and refine, for ten or twelve days; then draw it off gently into another cask, and put the slate on the bung hole as before, till the fermentation is over, which you may know by its coolness and pleasant taste. Thus of your white grapes you may make a good white wine,

and of the red, a wine much resembling claret ; but should it want colour, *see claret colouring*. The white grapes, if not too ripe, will give it a good Rhenish flavour, and are very cooling. There is also an other sort of grape that grows in England, which has much of the smell of musk, and this may, by the help of a little sugar, be brought to produce a fine rich wine, much resembling Canary or musk-adine, and altogether as pleasant.

## SECOND,

Take ripe grapes, gathered on a dry day, and put them into a press ; squeeze them gently, so as not to break the stones ; then strain the liquor well, and let it settle in a cask ; after which draw off the clear juice into a well seasoned and matched cask, and stop it up close for forty-eight hours ; then give it vent near the bung hole, and put therein a peg that may be easily moved, and in two days' time stop it close up again. It will be fit to drink in a quarter of a year's time, and will not be much inferior in quality to French wine. To season your cask, scald it out with hot water, and afterwards match it.

## THIRD.

To every gallon of ripe grapes put a gallon of soft water, bruise the grapes, let them stand a week without stirring, and draw the liquor off fine ; to



every gallon of wine put three pounds of lump sugar ; put it into a vessel, but do not stop it till it has done hissing, then stop it close, and in six months it will be fit to bottle.

A better wine though smaller in quantity, will be made by leaving out the water, and diminishing the quantity of sugar. Water is only necessary where the juice is so scanty or so thick, as in cowslip, balm, or black currant wine, that it could not be used without it. Very good wine has been made and after keeping for twelve months, by adding sugar to grapes in a proper proportion, which were so hard that it was necessary to burst them over the fire to get out the juice.

## ON MAKING WINES.

*By Joseph Cooper, Esq. of New-Jersey.*

The following paper on making wine, is taken from the “ Archives of useful knowledge, No. 3. Vol. 1.” It is given entire, as well to show the manner of making wine as to let our farmers see the advantage of devoting a small spot of ground to the cultivation of a vine which is either entirely neglected or suffered to grow in such situations as not to produce any fruit. Mr. Cooper is a practical man, who makes his experiments with care and attention. His observations therefore are particularly worthy of attention.

The author having already spun out this work on

wines, and particularly on domestic wines, to a greater length than he at first calculated, he therefore begs the reader will indulge his patience a little further, knowing as he does the very great importance of propagating and cultivating the different fruits in the United States, for the purpose of making domestic wines, spirits, &c. the which can be made as good, and of as rich a flavour, in all respects, as any that are imported from abroad. He has therefore dwelt so much longer on this very important subject, hoping the American farmer will be encouraged to persevere in being the means of diminishing our dependance on other nations, for foreign wines, spirits, &c. &c.

“ In the year 1777, Joseph Cooper, Esq. of New-Jersey, noticed a native grape vine\* in his neighbourhood, that covered a red cedar tree, so as to have the benefit of both sun and air, and the fruit on the south and south-west parts being unusually fine, and ripening early, he was induced to plant a cutting from it near his garden, where it grew for several years, on a small arbour, in a neglected state, bearing a few grapes of a good quality. He then pruned the vine and enlarged the arbour, and spread the vine thin and regularly on it, and secured it by tacking and lying, to prevent its being displaced by wind, which is very injurious to vines. The growth of the vine and the quality of the grapes soon exceeded his expectation, and induced him to enlarge his arbour to the size of sixty by forty feet,

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\*It is the *Vitis Occidentalis* of Bartram, or the blue bunch grape.

the whole of which the vine covered ; he then extended his garden fence, so as to take it in, and manured under the vine by water from the barn yard ; and although the ground under the vine was covered with a strong sward of grass, which gave three middling cuttings of grass, the vine produced the following crops of grapes.

“ In the year 1807, it yielded thirty-six and a half bushels of grapes ; three and a half of the best were eaten or given away ; the remainder were pressed, and yielded ninety-one gallons of juice : to the pumice, a small quantity of water was added, and on being pressed, twenty-six gallons more of juice were obtained. Both parcels were made into wine, three bottles of which were presented to the agricultural society of Philadelphia and found excellent. Some of it had been made with sugar, and some without.

“ In 1808, the fruit was destroyed by rose bugs and drought.

“ In 1809, the vine yielded twenty-six and a half bushels of grapes, and made eighty-five gallons of juice ; water was added as before, to the pumice, and the liquor which then flowed upon pressure, was mixed with the first running. The wine was tart at first, but grew sweeter as it advanced in age.

“ In 1810, it yielded forty-two and a half bushels of grapes, at one picking. Some had been previously taken off. A bushel of bunches weighed thirty-four pounds. Instead of water, Mr. Cooper added

about twenty gallons of cider to the pumice, and mixed the produce of the first and second pressings : one hundred and fifty gallons were thus obtained. Time only can show the effect of this novel combination.

“ One year he omitted water, and fermented the pure juice, but the next year, owing probably to the quantity of tartar which it had deposited being redissolved, notwithstanding the cask had been well rinsed, and with gravel, after racking it became tart, and he was induced to distil it for brandy, the quality of which was excellent. The addition of brandy to the wine, when fermenting, increased the acidifying process. The wine was racked three times, into a tub, but always returned to the same cask. If a fresh cask had been used, probably the acid fermentation would not have come on ; but the same cask is preferable. Mr. Cooper thinks that if water be added, there will be no danger of a second fermentation from the deposition of tartar.

“ A great advantage of the native grapes in question, over foreign grapes, is, that the vine of the former is not injured by frost ; whereas a slight frost destroys both the fruit and vine of the latter. Hence our native grape may be permitted to remain on the vine so late in the season, as that fermentation will not be affected by too great a heat. Mr. Cooper adds too, that they are not subject to blast or rot on the vines, like foreign grapes.

“ The vine covers a surface of sixty feet by forty,



making 2,400 square feet; there are 43,560 square feet in an acre, and consequently an acre would admit of eighteen arbours as large as Mr. Cooper's; but to allow free circulation of air, fifteen would be sufficient, and on this calculation Mr. Cooper concludes, that this number of vines 'planted in a good soil and properly cultivated, would, in five or six years at farthest, cover an arbour as large as mine, and produce more and better fruit than mine does from one vine. And from the product of my single vine, (which you have often seen,) for several years past, I am confident that an acre of land, properly planted and cultivated, with the best native grape vines, that can be found within a few miles of almost any farm house in New-Jersey, or perhaps any state in the union, would produce grapes sufficient to make fifteen hundred gallons of wine annually, in the way I have recommended. I need not mention its quality, as you have often tasted it.' \*\*

“The following directions to make wine, by Mr. Cooper, contains his last improvements.

“I gather the grapes when fully ripe and dry, separate the rotten or unripe from the others, and press for distillation, if the quantity is worth attending to; I then open the cider mill, so as not to mash the stems or seeds of the grapes; then run them through, put the pumice or mashed grapes on some clean long straw, previously made damp, and laid on the cider press floor, lap it in the straw, press it well, then

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\* Letter to the Editor Dec. 8th, 1810.



take off the pumice and add some water, or I believe sweet unfermented cider would be better, and answer in lieu of sugar. After it has soaked awhile, (but do not let it ferment in the pumice,) press as before, put all together, and add sugar till it is an agreeable sweet. I have found a pound to a gallon sufficient for the sourest grapes, and white Havana sugar the best ; but sweet grapes make the best wine without any sugar.

“ I have heretofore recommended putting the sugar in after fermentation, but on experience find it not to keep as well, and am now convinced that all the saccharine matter for making wine should be incorporated before fermentation. Previously to fermentation, I place the casks three or four feet from the floor ; as the filth works out, fill it up two or more times a day, till it emits a clear froth, then check the fermentation gradually, by putting the bung on slack, and tighten it as the fermentation abates. When the fretting has nearly ceased, rack it off ; for which purpose I have an instrument nearly in the shape of a wooden shovel, with a gutter in the upper side of the handle ; place it so as to prevent waste, and let it dribble into a tub, slowly, which gives the fretting quality an opportunity to evaporate, tranquilizes the liquor, and hastens its maturity. When the cask is empty, rinse it with fine gravel, to scour off the yeast that adheres to it from fermentation, then for each gallon of wine put in one pint of good, high proof, French or apple brandy, fill the cask about one third, then burn a sul-

phur match in it ; when the match is burnt out stop the bung hole, and shake it to incorporate the smoke and liquor ; fill the cask, and place it as before, and in about a month rack it again as directed above ; the gravel is unnecessary after the first racking. If the match should not burn well the first racking, repeat it : and if it don't taste strong enough to stand hot weather, add more brandy. I have racked my wine three or four times a year, and find it to help its ripening ; have frequently had casks on tap for years, and always found the liquor to improve to the last drawing.

“ Being fully of opinion that our common wine grapes are capable of producing wine as good and as palatable, (prejudice aside,) and far more wholesome than that generally imported at so great an expense, and a supply of that article being so uncertain, I am induced to urge the making wine of all the native grapes that can be procured, and in collecting them, to notice the vines that produce grapes of the best quality, and which are the most productive, as this will enable persons, to select the best vines to cultivate and to propagate from. This ought to be particularly attended to, as there are many vines which produce good grapes, but few in quantity ; and I believe full half the number that come from the seeds are males, and will never bear fruit. The sex is easily distinguished when in bloom, by the females showing the fruit in the heart of the blossom, as soon as open, and the male presenting nothing of that kind.

“As the native grape vine will not grow well from cuttings, the best way I know of to propagate them is by removing the vines, or laying branches in the earth to take root, for a year or more, and when rooted remove them ; or plant the seeds from the best kinds, and when in bloom dig up the males ; if well cultivated, they will blow in three or four years, but will produce different kinds, the same as apples ; and I have had some from the seeds superior to the parent.”

Mr Cooper observes in one of his publications.

“ In February or March, previous to the sap's running, I examine and trim the vines, observing which branches will suit best for training to different parts of the arbour, or whatever the vines are to cover, leaving a sufficiency of the strongest shoots to extend or fill vacancies, if wanted ; then cut the other side shoots of the last year's growth, that appear large enough for bearers, leaving not more than three or four buds or eyes, and the diminutive ones ; cut the dead and unnecessary old vines, close to the leading branches, then spread the vine regularly over what they are to run on, and secure them from being shifted, by tacking or tying.

“ From trials and observations I am convinced, that the greatest error in making wine in our own country, is using too much sugar and water for the quantity of fruit. The nearer wine is made from the juice of fruit, without water, the better ; with no more sugar than will make it palatable by correcting the acid, and brandy or good cider spirit to

give it strength sufficient to keep through our hot summers. The spirit will incorporate with the wine, so that when it arrives to proper age, it will not be known, by its taste, that any had been in it."

### CIDER WINE.

The method of preparing this wine, consists in evaporating in a brewing copper, the fresh apple juice, until it be half consumed. The remainder is then immediately conveyed into a wooden cooler, and afterwards is put into a proper cask, with an addition of yeast, and fermented in the usual way.

### SECOND.

Take of cold soft water, four gallons, cider fifteen gallons, honey twelve pounds, tartar in fine powder two ounces. Ferment. Mix ginger in powder, six ounces, sage and mint two handfuls. Add British spirits one gallon. This will make eighteen.

### CIDER WHITE WINE.

Take of cold soft water two quarts, Cider nine gallons, honey eight pounds, white tartar in fine powder, two ounces. Ferment. Mix cinnamon, cloves, and mace, two ounces. Add rum half a gallon. This will make nine gallons.

## CIDER RED WINE

Take of cold soft water three gallons, cider sixteen gallons, honey ten pounds. Ferment. Add raw sugar four pounds, beet root sliced, four pounds, red tartar in fine powder, six ounces. Mix sweet marjoram and sweet briar three handfuls, rum one gallon. This will make eighteen gallons.

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## TO IMPROVE VITIATED WINES.

Take a pint of clarified honey, a pint of water in which raisins of the sun have been well steeped, and three gills of good white wine or red, (according to the colour of the wine you wish to improve,) let them boil over a slow fire, till a third part is wasted, taking off the scum as fast as it rises ; then put it very hot into your vitiated wine, letting it stand with the bung out. Afterwards put into a linen bag, a little mace, nutmeg, and cloves, and let it hang in the wine by a string, for three or four days. By this method, either new or old wines will not only be fined, but much more improved other ways, for by it they are recovered from their foulness and decay, and acquire an agreeable smell and flavour. They may be still further improved, if, after taking out the spice, you hang in its place a small bag of white mustard-seed, a little bruised. The work will then be complete.



## TO RESTORE BRITISH WINES THAT ARE PRICKED.

Take and rack] your wines down to the lees, into another cask, where the lees of good wines are fresh ; then take a pint of strong aqua vitæ ; and scrape half a pound of yellow bees' wax into it, which by heating the spirit over a gentle fire, will melt ; after which, dip a piece of cloth into it, and when a little dry set it on fire with a brimstone match, put it into the bung-hole, and stop it up close.

## TO RESTORE FLAT WINES.

Flat wines may be restored by one pound of jar raisins, one pound of honey, and half a pint of spirit of wine, beaten up in a mortar with some of the wine, and then the contents put into the cask.

## A SECOND METHOD OF TAKING OFF THE ACID, OR RESTORING BRITISH WINES WHICH ARE PRICKED.

First prepare a fresh emptied cask, that has had the same kind of wine in which you are going to rack, then match it, and rack off your wine into it, putting to every ten gallons, two ounces of oyster powder, (SEE OYSTER POWDER,) and half an ounce of bay salt, then get your staff, and stir it well about, let it stand till it is fine, which will be in a few days ; after which rack it off into another good

cask, (previously matched) and if you can get the lees of some wine of the same kind, it will improve it much. Put likewise a quart of brandy to every ten gallons, and if your cask has been emptied a long time, you must match it better on that account; but if even a new cask, the matching must not be omitted. A fresh emptied cask is to be preferred.

N. B. This receipt will answer for all made wines.

### TO CORRECT GREEN OR HARSH WINES.

Take an ounce of salt, half an ounce of calcined gypsum, in powder, and one pint of skimmed milk. Mix these up with a little of the wine, and then pour the mixture into the cask, put in a few lavender leaves, stir the wine with a stick so as not to disturb the lees, and bung it up.

### ANOTHER.

Boil a gallon of wine, with some beaten oyster shells and crab's claws, burnt into powder, an ounce of each to every ten gallons of your wine; then strain out the liquor through a sieve, and when cold, put it into your wine of the same sort, and it will give it a pleasant lively taste.

N. B. A lump of unslaked lime, put into your cask, will also keep wine from turning sour.

## TO TAKE AWAY THE ILL SCENT OF WINES.

Take a long roller of dough, stuck well with cloves ; hang it in the cask, and it will draw the ill scent from the wines into itself.

## TO SWEETEN WINES.

In thirty gallons of wine infuse a handful of the flowers of clary ; then add a pound of mustard seed, dry ground, put it into a bag, and sink it to the bottom of the cask.

## FOR WINE WHEN LOWERING OR DECAYING.

Take one ounce of roach alum, make it into powder ; then draw out four gallons of your wine, mix the powder with it, and beat it very well up for half an hour ; then fill up the cask, and when fine, (which will be in a week's time, or little more,) bottle it off. This will make it drink fine and brisk.

## FOR WINE WHEN ROPY.

Tap your cask of wine, and put a piece of coarse linen cloth upon that end of the cock which goes to the inside of the cask ; then rack it into a dry cask ; to thirty gallons of wine, put five ounces of powdered alum, roll and shake them well togeth-

er, and it will fine down, and prove a very clear and pleasant wine.

### ANOTHER METHOD.

Take an ounce of ground rice, half an ounce of burnt alum, and half an ounce of bay salt. Beat the whole up in a mortar with a pint or more of the wine, pour it into the cask, and roll it about for ten minutes. The cask must not be bunged up for a few days. As soon as the wine becomes fine, rack it off.

### ANOTHER.

Bring the cask of wine out of the cellar, and place it in a shady situation, to receive the circulation of air ; and take out the bung. In three weeks or a month, rack it off into a sweet cask, which fill up, and put into the wine an ounce of cinnamon in the stick, and bung it up tight.

### TO SWEETEN A MUSTY CASK.

Take some dung of a milking cow when it is fresh, and mix it with a quantity of warm water, so as to make it sufficiently liquid to pass readily through a large funnel ; but previously dissolve in this water two pounds of bay salt, and one pound of alum ; then put the whole in a pot on the fire, stirring it with a stick, when near boiling, pour it into your

cask, then bung it tight, and shake it well about for five or six minutes, as if rinsing it, and let it remain in for two hours, then take out the bung to let the vapour out; after which put in your bung again, and give it another stirring; in the end of two hours more, you may rinse it out with cold water, till it comes out perfectly clear; then have in readiness one pound of bay salt, and a quarter of a pound of alum, boiled in a little water. Repeat this as you did the former, and when emptied, it will be fit for use, or you may bung it up for keeping.

### ANOTHER.

Set fire to a pound or more of broken charcoal, put it into the cask, and immediately fill up the cask with boiling water. After this, roll the cask once or twice a day, for a week; then pour out the charcoal and water, wash out the cask with clean cold water, and expose it to the external air for some days.

### THE METHOD OF MAKING WINE IN GRAPE COUNTRIES.

This is usually done by treading the grapes in a large vat, with the feet, squeezing the juice well out of them with a press, and afterwards fermenting it. The excellence of wine consists in its being neat, fine, bright, and brisk, without any taste of the soil, and of a clear steady colour; having strength



without being heady, body without sourness, and in keeping without growing hard. The difference of flavour, taste, colour, and body, in wines, greatly depends on the different climates, soils, method of pressing, gathering, fermenting, together with the various qualities of the grapes. Wines generally take their names from the countries which produce them.

### DIRECTIONS FOR MANAGING WINE VAULTS.

The principal object to be attended to in the management of wine vaults, is to keep them of a temperate heat. In order to which, care must be taken to close up every aperture or opening, that there may be no admission given to the external air. The floor of your vault should likewise be well covered with saw-dust, which must not be suffered to get too dry and dusty, but must receive now and then an addition of new, lest, when you are bottling or racking your wine, some of the old dust should fly into it. At most vaults, in the winter, it is necessary to have a stove or chafingdish, to keep up a proper degree of warmth, which is as near temperate as you can get it. In the summer time it will be best to keep them as cool as you can; the thermometer will be best to be fixed in that part of the vault where your wines for sale or bottling are kept, and endeavour always to have it as low as temperate.

## DIRECTIONS CONCERNING THE LANDING AND CELLARING OF WINES IN HOT WEATHER.

Let your wines stay on the quay as little as possible, but get them speedily to your vault ; and that they may be kept from fretting, roll them to the coldest place in it : then take out the bungs, and dip the bung-cloths in brandy, adding to each of the casks a quart of that liquor, and stirring it about the surface with a stick ; after which, put the bung slack on the holes, and after three days bung them up, and stillage them. In a week or ten days, spile them in the head, to see if the fermentation has ceased, and if it has not, rack them off. If the wines have age, and are for sale or present use, they should be fined.

N. B. If the weather be cold when your wines are landed, get them as soon as you can, to your vault, stillage them, and put as much saw-dust about them as you can, to keep them warm, and take off the chill. In two or three days put into each of them a quart of brandy, and if they have sufficient age, in ten days or a fortnight you may fine them.

## TO MELLOW WINE.

Cover the orifices of the cask containing it, with bladder closely fastened, instead of the usual materials, and an aqueous exhalation will pass through

the bladder, leaving some fine crystallizations on the surface of the wine, which when skimmed off, leaves the wine in a highly improved state of flavour. Remnants of wine covered in this manner, whether in bottles or casks, will not turn mouldy, as when stopped in the usual way, but will be improved instead of being deteriorated.

### DIRECTIONS FOR RACKING FOREIGN WINES.

First, take care that your vault or cellar is of a temperate heat, and that your casks be sweet and clean. Should they have an acid or musty smell, it may be remedied by matching; and if not clean, rinse them well out with clean cold water, and after draining, rinse well out with a quart of brandy, putting the brandy afterwards into your ullage cask. Then place your empty cask on the stillage, and put in your large funnel; if the wine you are going to rack off is fined, you must rack it off with a large cock; then give your full cask vent by taking the bung out, and have in readiness two cans, that when you are emptying one, the other may be filled; by which means you will sooner accomplish your business. When it has ceased to run, put up your tilting jack, and get all the fine off that you can, afterwards strain the lees or bottoms through a flannel or linen bag. As much of it as runs fine, you may put to the rest of the wine; but the bottoms of port is generally put into the ullage cask

without going through the filtering bag. In racking wine that is not on the stillage, a wine-pump is to be preferred, though a crane is mostly used.

### TO MANAGE AND IMPROVE RED PORT WINE WHEN POOR AND THIN.

If your wines be sound, but wanting in body, colour, and flavour, draw out thirty or forty gallons, and return the same quantity of young and rich wines, such as are generally brought to this country for that purpose. To a can of which put three gills of colouring, with a bottle of wine or brandy, in which half an ounce of cochineal has been previously pounded and mixed. Then whisk it well together, and put it into your cask, stirring it well about with your staff; and if not bright in about a week or ten days, you may fine it for use; previous to which put in it at different times a gallon of good brandy. If your port wines are short of body, put a gallon or two of brandy in each pipe, as you see necessary. If the wines be in your own stock, put it in by a quart or two at a time, as it feeds the wine better in this way than putting it in all at once; but if your wines are in a bonded cellar, procure a funnel that will go down to the bottom of the cask, that your brandy may be completely incorporated with the wine. When your port is thus made fine and pleasant, you may bottle it off, taking care afterwards to pack it in a temperate place, with saw-dust or leaths. After which, it will not

be proper to drink for at least two months. When laying your wines down in bottles, you should never use new deal saw-dust, as that causes it to fret too much, and often communicates a strong turpentine smell through the corks to the wine ; on which account it is best to mix it with some old saw-dust, or to let it lie for some time before you pack with it.

### TO IMPROVE AND BRING ABOUT WINE WHICH HAS GONE SOUR.

Put a piece of fresh beef, cut small, in the cask with the wine, the wine will feed on it, become sweet, much stronger, and better tasted ; the beef will also clarify it, and make it much clearer than it was before.

### THE METHOD OF PRESERVING PRICKED WINES.

Take a bottle of red port wine which is pricked, and put to it half an ounce of tartarized spirit of wine ; then shake the liquor well together, set it by for a few days, and you will find it much improved. Observe, it must be rectified wine spirit tartarized, for spirit of wine is rectified from malt spirit, which has not the same effect, nor is the smell so pleasant as that of the former.

N. B. If you cannot get the above spirit ready prepared, procure some of the best rectified wine spirit, and imbibe some fine alkaline salts, such as that of tartar, and the same end will be answered.



## TO DISCOVER LEAD IN WINES.

Take clean oyster shells and stone brimstone, equal weights; or in lieu of oyster shells, chalk. Reduce them to a fine powder, mix them, and put them in a crucible, expose them to a white heat for fifteen minutes: when cool reduce it to powder, and keep it in a tight bottle for use; of this powder take one hundred and twenty grains, put in a strong bottle holding a pint of water which has been boiled, to expel the air: add one hundred and eighty grains of cream of tartar, cork the bottle immediately, and shake it from time to time, during four or six hours. Let it stand till clear, then pour off the clear liquor, keep it in ounce phials well corked, for use, adding to each ounce ten drops of muriatic acid; one part by measure of this liquor, to two parts of wine, will precipitate lead and copper of a black colour, but will not precipitate iron, which is never purposely added, and therefore ought not to be regarded as an adulteration. The lead so precipitated may be metalized by means of a drop or two of charcoal, by means of a blow pipe. Pure wines are not affected by this liquor.

## TO TAKE OFF THE ACID FROM A PIPE OF PORT WINE, A DIFFERENT WAY.

First, get a fresh emptied port pipe, and rack half of your wine into it: then take a match of

five inches long, and an inch and a half broad, for each of the pipes, and set fire to them, putting them into the bung-holes, with one end made fast by driving in the bung very tight. Then let them remain for five minutes, after which, roll them well about, and on the day following, rack them both into one, adding half a pound of oyster powder and a quarter of a pound of bay salt, together with an ounce of tartarized spirit of wine. After which, take a staff and stir it well; then drive in your bung tight, and let it remain three or four weeks. Then get another fresh-emptied pipe, (or you may take the old one, and after matching it again,) and rack off your wine from the lees, the lees you may filter and add to therest. Then taste your wines, and if they be sound, take a good hogshead of new wine, mix them together, with two gallons of brandy, a quart of colouring, and two ounces of cochineal, (*see improving red port.*) This will make three hogsheads of good wine. After which, you may fine it for bottling, either for home use, or exportation; and when it has been in bottles six months, it will be fit for use.

### ACID,

In a general sense, denotes such things as affect the palate with a sharp sour taste. All perfect wines have naturally some acidity, and when this acidity prevails too much, the wine is said to be pricked; which is really a state of the wine's ten-

ding to vinegar ; but the alkaline salt, as that of tartar, imbibed by spirit of wine, has a direct power in taking off the acidity, and the spirit of wine operates as a great preservative of wines in general. If this operation be performed, pricked wines will be perfectly recovered by it, and remain saleable for some time. The same method may be used to malt liquor just turning sour, with equal advantage.

### THE METHOD OF MANAGING CLARET.

Claret is not a wine of a strong body, (though it requires to be of a good age before it be used,) therefore it should be well managed, and the best method is to keep it in a vault or cellar that is always pretty nearly of the same heat, and should be fed once every two or three weeks, with a pint or two of the best French brandy. You must taste them frequently, to know what state they are in, and use your brandy accordingly, taking care never to put much in at a time, especially to those that you have for immediate sale, as that would destroy the flavour of the wine, and make it taste fiery, but a little at a time incorporates with the wine, and feeds and mellows it.

If your claret be faint, and have lost its colour, rack it into a fresh-emptied hogshead, upon the lees of good claret ; then bung it up, putting the bung downwards for two or three days, that the lees may run through it ; after which, lay its bung up till it be fine ; and if the colour be not yet perfect, rack

it off again, into a hogshead that has been newly drawn off, with the lees ; then take one ounce of cochineal, (beat in a mortar and infused for some time in a bottle of wine,) shake it up, and put it into your hogshead, and your wine will by this method acquire both a good colour and body. Or, take a pound of turn sole, and put it into a gallon or two of wine ; let it lie a day or two, and then put it into your vessel ; after which, lay the bung downwards for a night, and the next day roll it about : then lay it up, and it will have a perfect colour.

### ANOTHER METHOD OF COLOURING CLARET.

Take as many as you please of damsons or black sloes, and stew them with some of the deepest coloured wine you can get, and as much sugar as will make it into a syrup. A pint of this will colour a hogshead of claret. It is also good for red Port wines, and may be kept ready for use in glass bottles.

### A REMEDY FOR CLARET THAT DRINKS FOUL.

Rack off your claret from the dregs, on some fresh lees of its own kind, and then take a dozen of new pippins, pare them, and take away the cores or hearts ; then put them into your hogshead, and if that is not sufficient, take a handful of the oak of Jerusalem, and bruise it ; then put it into your wine,

and stir it very well. This not only takes away the foulness, but also gives it a good scent.

### ANOTHER METHOD OF CURING WINE WHEN ROPY.

Take half an ounce of chalk in powder, half an ounce of burnt alum, the white of an egg, and one pint of spring water, beat the whole up in a mortar, and pour it into the wine, after which roll the cask about, for ten minutes, and then place it on the stand, leaving the bung out for a few days ; as soon as the wine is fine, rack it off.

### TO FINE A HOGSHEAD OF CLARET.

Take the whites and shells of six fresh eggs, and proceed as you do with Port finings. Claret requires to be kept warm in saw-dust, when bottled.

*Red Hermitage* must be managed in the same way as claret, and the white likewise, except the colouring, which it does not require.

*Burgundy* should be managed in the same manner as red hermitage.

### TO MANAGE AND FINE WHITE PORT WINE.

White port is a very stubborn wine, and requires to be fined and racked two or three times, before it will become soft and pleasant.

When your wine has been for some time in the vault,



take two ounces and a half of isinglass, beat it very small with a hammer, and put it into two quarts of stale cider or perry, for forty-eight hours ; then whisk it up into a froth in a can, with some of the wine, and if the weather be temperate, put into the finings a gill of marble sand, whisking them well together : then stir your wine well with a staff, and put in your finings, stirring it well about again, for five minutes. You must leave the bung loose for three days, afterwards bung it up for a fortnight, and rack it off into a Madeira pipe, using less of the finings than before. By this method your wines will be much improved, and made to drink soft and pleasant.

#### TO IMPROVE A BUT OF SHERRY WINE.

If your sherry be new, and fiery to the taste, rack it off into a sweet cask, and add five gallons of mellow Lisbon, which will take off the fiery taste, and make it drink mild ; and to give it a bead, take a quart of honey, mix it with a can of your wine, and put it into the cask when racking. By this method sherry for present use will be greatly improved, having much the same effect upon it as age. Sherry for sale, in your vaults, should always be fined, as that improves it greatly.

#### TO FINE A BUTT OF SHERRY WINE.

Take an ounce and a half of isinglass, beat it with a hammer till you can pull it into small pieces,

then put it into three pints of cider or perry, and let it remain twenty-four hours, till it becomes a jelly; after which put it into a can, with a quart or two of wine, and whisk it well up with the whites and shells of six fresh eggs; then, if your butt be full, take four or five gallons out to make room for the finings, and take a staff and stir the wine in your butt well about with it; then nearly fill your can of finings with wine, whisk it well, and put it into the butt; then take the staff, and stir it well about for five minutes; afterwards put in the can of wine you took out, and put your bung in loose, that it may have vent. In two days you may bung it up, and in eight or ten it will be fit for bottling; when bottled, pack it in a temperate place.

### TO FINE PALE SHERRY.

Pale sherry is generally shipped from Spain as such, and is not as fiery as common sherry, but is often made from it in this country, by putting three pints of skim-milk with the whites of eight eggs. They must be beat well together in a can, and put in with your finings, in the same manner as you do for the common sherry.

If your sherry be thin and poor, you must feed them with good brandy, as you do other wines.

### TO IMPROVE A PIPE OF MADEIRA WINE.

Madeira is a very strong wine, and is greatly esteemed in this country, yet this wine requires

age fully as much as any other that is imported ; for when new, it is both fiery and very stubborn : on which account many wine merchants send their wines round by the West-Indies before they come to this country, by which they are much improved, and sell at a higher price ; yet there is a considerable quantity of it imported direct from Madeira, and this, with age and management, may be made as good a wine as that which has been round to the Indies. Madeira should be kept in a warmer place than port wine, and therefore requires a good body ; which if it be short of, you must feed with brandy, as you do your other wines ; or if deficient in flavour or mellowness, add to it a gallon or two of good Malmsey wine. If your wine be new, it will require a larger quantity of finings than wine of greater age.

#### TO FINE A PIPE OF MADEIRA WINE, WHEN NEW.

Take three ounces of isinglass, and dissolve it, (or if your wine have sufficient age, two ounces will be enough) also one quart of skim-milk, and half a pint of marble sand ; put these all together in a can, and whisk them well up with some wine : if your pipe is full, take out a canful to make room, and stir your pipe well about ; then put in your can of finings, and stir that well about with your staff ; for five minutes ; after which, put the other can of wine into it, and let it have vent for three days ;

then close it up, and in ten days or a fortnight it will be fine, and fit for bottling. Madeira when bottled, should be packed with saw-dust, in a warm place.

### TO FINE VIDONIA WINE.

Vidonia or Teneriffe wine, is one of the cheapest wines imported into this country. When it is first imported, it has a harsh and acid taste; but if properly managed it will more resemble Madeira wine than any other: so much so, that in many places it is made to pass for it. In order, therefore, to take off this harshness, you must fine it down, and then rack it off upon the lees of Madeira or white port, fining it again with a light fining: and if twenty or thirty gallons of good Madeira wine were added, it would pass for Madeira.

### TO FINE A PIPE OF VIDONIA.

Dissolve two ounces of isinglass, and the whites and shells of six fresh eggs, beat them well up together with a whisk in a can, and add to them a gill of marble sand; after which manage it as you do other finings for wine. Vidonia, when bottled, should be packed with saw-dust, in a warm place.

### LISBON WINE.

There are two sorts of this wine, the mild and the dry; but if you have either of them, by the help of other wines you may make the other; Thus, if

your Lisbons are all dry, take out of your pipe thirty-five or forty gallons, and put in the same quantity of Calcavella, stir it well about, and this will make a pipe of good mild Lisbon; likewise, if your wine be all mild, take the same quantity out as mentioned before, and fill your pipe up with Malaga sherry, stirring it about as the other; and you will have a good dry Lisbon wine.

### TO FINE A PIPE OF LISBON WINE.

The same kind of finings which you use for Vidonia will answer for Lisbon wines; or you may fine your Lisbon with the whites and shells of sixteen eggs, and a small handful of salt; beat it together to a froth, and mix it with a little of the wines; then pour it into the pipe, stir it about, and let it have vent for three days; after which, bung it up, and in a few days it will be fine. Lisbon, when bottled should be packed either in saw-dust or leaths, in a temperate place.

### CLARIFICATION.

Wine is better clarified with skimmed milk, than with eggs. Milk decomposes the tartarous acid, and combines with it, eggs do not. Half a pint is sufficient for a quarter cask.

### ANOTHER.

A quarter cask of sherry being very thick, six eggs, with a quantity of fine sea sand, was mixed



together and put in, and stirred occasionally for three days, this made it quite clear, and was an improvement to the wine.

### ANOTHER.

Boil a pint of skimmed milk, when cold, mix with it an ounce of chalk in find powder. Pour it into the cask and roll it ten minutes, the following day bung up the wine, and rack it off as soon as fine.

### BUCELLA WINE.

There are two sorts of this wine, the one dry, and the other of a milder sort. It is a pleasant, though thin summer wine, yet may, by fining and racking, be much improved. In fining it, proceed in the same way as with the Madeira ; only observe, that if you do not wish it very pale, you must keep the milk out of the finings. This is a very tender wine, and it should be fed with a little brandy, for if kept in a place that is either too hot or too cold, it will be in danger of turning foul : it should also be very well corked, with good corks. This wine when bottled, should be packed with leaths, in a temperate place.

*Malmsey*, is a sweet and full-bodied wine, but bears a high price, and is rather scarce. When you choose it, see that it is full, pleasant, fine, and of a good colour. In fining, you may proceed as

in the Madeira ; or, take twenty fresh eggs, beat the whites, yolks, and shells, all together, and manage it as you do other finings.

*Calcavella, Sweet Mountain, Pacceretta, and Malaga*, should be managed and fined in the same manner as Lisbon wine.

*Tent Wine, Muscadine, Sack, and Bastard*, should be managed the same as *Malmseys*, and fined with sixteen or twenty fresh eggs, and a quart or three pints of skim-milk ; in managing which, proceed as you do in other finings.

*Old-Hock* and *Vindegraw*, are thin but pleasant wines, and should be fed with a little good brandy, and fined if necessary, with the whites and shells of six or eight eggs. *Old-hock* is a Rhenish, and *Vindegraw* a French wine ; they are much drank at meals.

*White Creamery*, generally comes from France in bottles, and should always be packed in a cold place.

### TO MAKE CLARET AND PORT WINE ROUGHER.

Put a quart of claret or port to two quarts of sloes ; bake them in a gentle oven or over a slow fire, till a good part of their moisture is stewed out ; then pour off the liquor, and squeeze out the rest. A pint of this will be sufficient for thirty or forty gallons.

## TO MAKE WINE SETTLE WELL.

Take a pint of wheat, and boil it in a quart of water, till it burst and become soft; then squeeze it through a linen cloth, and put a pint of the liquor into a hogshead of unsettled white wine; stir it well about, and afterwards it will become fine.

## TO IMPROVE WHITE WINE.

If your wine have an unpleasant taste, rack one half off; and to the remaining half add a gallon of new milk, a handful of bay salt, and as much rice; after which, take a staff, beat them well together for half an hour, and then fill up the cask and when you have rolled it well about, stillage it, and in a few days it will be much improved. If your white wine is become foul, and has lost its colour, for a butt or pipe, take a gallon of morning's milk, put it into your cask, and stir it well about with your staff; then set it with the bung upwards, and when it has well settled, put in three ounces of isinglass, made into a jelly, together with a quarter of a pound of loaf sugar scraped fine, stir it well about, and on the day following, bung it up. In a few days more it will fine, and have a good colour.

## DIRECTIONS FOR FINING A PIPE OF PORT WINE.

It is the opinion of many private gentlemen in this country, that red port wine should be bottled in

its rough state, without being first bright ; they therefore stir their wine about well before they bottle it ; but this is certainly a mistake, as in the bottoms or settlings of wines a considerable quantity of acid is contained. It will be better to keep it in a good temperate vault or cellar, till it becomes bright, or else to fine it down. Some of the most experienced and extensive vintners in England always fine their port wines, both for bottling and selling, in wood, if convenient, as that takes away their foulness, and renders the wines soft and pleasant to the taste. The usual method however is as follows : Take the whites and shells of eight fresh eggs, beat them in a wooden can or pail, with a whisk, till it becomes a thick froth ; then add a little wine to it, and whisk it up again. If your pipe is full, take out four or five gallons of the wine to make room for the finings ; then take your staff, and stir it well about ; after which, put in your finings, stirring it well again for five minutes ; afterwards put in the can of wine that you took out, leaving the bung out for a few hours, that the froth may fall ; then bung it up, and in eight or ten days it will be fine and fit for bottling.

N. B. If the weather be warmer than temperate, you must add a pint of fresh water sand to your finings.

### HIPPOCRATES' SLEEVE OR FILTERING BAG.

This is a very necessary thing for wine and spirit merchants, whereby they may fine all their

bottoms of wines and foul spirits, though never so thick. If your compound goods be too thin, and do not come off fine after repeated strainings, get some alabaster powder, and mix it with them ; they will not acquire any ill flavour from the use of it.

This bag or sleeve is made of a yard of either linen or flannel, not too fine or close, and sloping, so as to have the bottom of it run to a point, and the top as broad as the cloth will allow. It must be well sewed up the side, and the upper part of it folded round a wooden hoop, and well fastened to it ; then tie the hoop in three or four places, with a cord, to support it ; and when you make use of it, put a can or pail under it to receive the liquor, filling your bag with the sediments ; after it has ceased to run, wash out your bag in three or four clear waters, and then hang it up to dry in an airy place, that it may not get musty.

A wine dealer should always have two bags by him, one for the red and the other for the white wines.

#### DIRECTIONS TO MAKE OYSTER POWDER.

Get some fresh oyster shells, wash them, and scrape off the yellow part from the outside ; lay them on a clear fire till they become red hot ; then lay them to cool, and take the softest part, powder it, and sift it through a fine sieve ; after which, you



may use it immediately, or keep it in bottles well corked up, and laid in a dry place.

### HOW TO MAKE A MATCH.

Melt some brimstone, and dip into it a piece of coarse linen cloth; of which, when cold, take a piece, about an inch broad and five inches long, and set fire to it, putting it into the bung hole, with one end fastened under the bung, which must be driven in very tight; let it remain for a few hours before you remove it out.

### A GENERAL METHOD WITH FININGS.

First put your finings (when ready) into a can or pail, with a little of that which you are going to fine; whisk them up all together till they are perfectly mixed, and then nearly fill up the can with your liquor, whisking it well about again; after which, if your cask be full, take out four or five gallons to make room; then take your staff, and give it a good stirring; next whisk your finings up, and put them in; afterwards stirring it well up with your staff for five minutes. Then drive your bung in, and bore a hole with a gimblet, that it may have vent for three or four days, after which, drive in your vent peg.

### TO MAKE COLOURING FOR RED FRENCH WINES.

Take four ounces of turnsol rags, put them into an earthen vessel, and pour upon them a pint of boiling water ; then cover the vessel up close, and let it stand till cold, afterwards straining off the liquor. A little of this will colour a large quantity of wines : it may be made with brandy instead of water, and if you make it into a syrup with sugar, will keep the longer.

N. B. It has been the general method with wine coopers to steep the turnsol cold in wine, for a night ; and the day following to wring it out with their hands, and use it. This method is one of the best.

### TO PASS WHITE WINE OFF FOR CHAMPAIGNE.

Rack it often from the lees ; and when very brilliant, bottle it off : this must be done between vintage time, and the month of May.

### TO MAKE WINE SPARKLE LIKE CHAMPAIGNE.

Take good care to rack off the wine well, and in March bottle it as quick as possible. The bottles must be very clean and dry, and the corks of the best sort, made of velvet or white cork. In two

months after, the wine will be in a fine condition to drink.

### TO CORRECT SHARP, TART, ACID WINES.

Mix one ounce of calcined gypsum in powder, and two pounds of honey; pour the mixture into the wine, and stir it so as not to disturb the lees; fill up the cask, and the following day bung it up. Rack this wine as soon as fine.

### ANOTHER.

Mix half an ounce of the salt of tartar, half an ounce of calcined gypsum in powder, with a pint of the wine; pour it into the cask, and put in an ounce of cinnamon in the stick, stir the wine without disturbing the lees, fill up the cask, and the day following bung it up.

### ANOTHER.

Boil three ounces of rice, when cold put it into a gauze bag, and immerge it into the wine; put into the wine also a few sticks of cinnamon, and bung up the cask. In about a month after take the rice out.

### TO RESTORE SOUR WINE.

Take calcined gypsum in powder, one ounce, cream of tartar in powder, two ounces, mix them in a pint or more of brandy, pour into the cask, put in

also a few sticks of cinnamon, and then stir the wine without disturbing the lees. Bung up the cask the next day.

### ANOTHER METHOD.

Boil a gallon of wine with some beaten oyster shells and crabs' claws, burnt into powder, an ounce of each to every ten gallons of wine, then strain out the liquor through a sieve, and when cold, put it into wine of the same sort, and it will give it a pleasant lively taste. A lump of unslacked lime put into the cask will also keep wine from turning sour.

### GERMAN METHOD OF RESTORING SOUR WINES.

Put a small quantity of charcoal in the wine, shake it, and after it has remained still for forty-eight hours, decant steadily.

### METHOD OF PREPARING CLARET WINE FOR SHIPPING.

Claret wine, before the French revolution, was the staple article of export from the great commercial city of Bordeaux, to every part of Europe. And, it may be presumed, will soon again re-assume its wonted importance. The vintage generally begins, for making this sort of wine, about the middle or latter end of September, and is generally finished in all the month of October. The mode by which the juice is expressed from the grape, is by

the workmen trampling them with their bare feet in a large reservoir or cooler, (not the cleanest operation in the world,) which has an inclination to the point where the spout or spouts are placed for taking off the expressed juice, which is conveyed to large open vats, that are thus filled with this juice to within ten or twelve inches of the upper edge ; this space is left to make room for the fermentation, which spontaneously takes place in this liquor After the first fermentation is over, and the wine begins to purify itself, which is ascertained by means of a small cock placed in the side of the vat, and takes place generally by the middle of February, or beginning of March, in the following year, it is then racked off into hogsheads, carefully cleansed, and a match of sulphur burned in each cask before filling ; when thus racked off, it is bunged up, and immediately bought up by brokers, for the Bordeaux merchants, and here it is made to undergo the second or finishing fermentation, in the following manner : It may be proper here to remark, that claret wine is generally divided into three growths, first, second, and third ; the first growths, namely, Latour, Lafete, and Chateaux Margo, are uniformly rented, for a term of years, at a given price, to English merchants, through whom or their agents *only*, is there a possibility of procuring any portion of this wine. The second growths are shipped to the different markets of Europe, North and South America ; and the third growth principally to Holland and Hamburgh. In order to strengthen the natural



body of claret wine, and to render it capable of bearing the transition of the sea, the first and second growths are allowed from ten to fifteen gallons of good Alicant wine to every hogshead, with one quart of stum.\* The casks are then filled up and bunged down. They are then ranged three tier high, from one end of the cellar to the other, each tier about eighteen inches, with two staunchions of stout pine plank, firmly placed between the heads of each hogshead, from one end of the cellar to the other, until they have reached, and are supported by, the end walls of the building. This precaution is necessary to guard against the force of fermentation, which is often so strong as to burst out the heads of the hogsheads, notwithstanding the precautions taken to secure them in this situation during the summer heats. The wine cooper, who has the charge of these wines, regularly visits them twice a day, morning and evening, in order to see the condition of the casks, and when he finds the fermentation too strong, he gives vent, and thus prevents the bursting of the casks. The third, or inferior growth, is exactly treated in the same way, with the single exception of having Benicarlo wine substituted for Alicant, in preparing them for their second fermentation, as cheaper, and better suited to their quality ;

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\* Stum is a certain quantity of white wine, strongly impregnated with sulphur. The mode of preparing it is as follows : A hogshead half filled with good white wine, or what is termed in French *vin de grave* ; from fifteen to twenty long matches of sulphur are successively burned in this hogshead, with the bunghole closed. After this operation, the white wine becomes so impregnated with sulphur, that it has acquired all its taste and flavour, and is thus used as a ferment.

both these wines are of Spanish growth, and brought to Bordeaux by the canal of Languedoc ; they are naturally of a much stronger body than native claret. Thus mixed and fermented, the claret becomes fortified, and rendered capable of bearing the transition of seas and climates. About the latter end of September or beginning of October, the fermentation of these wines begins to slacken, and they gradually become fine ; in this state they are racked off into fresh hogsheads carefully cleansed, and a match of sulphur burned in each before filling. After this operation, they are suffered to remain undisturbed (save that they are occasionally ullaged) till about to be shipped, when they are racked off a second time, and fined down with the whites of ten eggs to each hogshead ; these whites are well beat up together, with a small handful of white salt ; after this fining, when rested, the hogsheads are filled up again with pure wine, and then carefully bunged down with wooden bungs, surrounded with clean linen to prevent leaking ; in this state the wines are immediately shipped. Here it may be proper to state, that the lees that remain on the different hogsheads that have been racked off, are collected and put into pipes of one hundred and forty, or one hundred and fifty gallons each, and this lee wine, as it is termed, is fined down again with a proportionate number of eggs and salt ; after which, it is generally shipped off as third growth, or used at table, mixed with water. If at any time hereafter the method herein given, of

making and preparing claret wine for shipping, as practised in Bordeaux and its neighbourhood, should be applied to the red wines of this country, particularly those of Kaskaskias; it may be proper here to give a description of the mode in which these wines are racked, which will be found simple, effectual, and expeditious; I mean for the lower or ground tiers. The upper, or more elevated ones, rack themselves, without coercion of any kind. When you are about to rack a hogshead of wine upon the ground tier, you place your empty hogshead close to the full one, in which you then put your brass racking cock; on the nozzle of which cock you tie a leather hose, which is generally from three to four feet long; on the other end of this hose is a brass pipe, the size of the tap hole, with a projecting shoulder towards the hose to facilitate knocking in this pipe into the empty hogshead, which is then removed a sufficient distance from the full hogshead in order to stretch the hose, now communicating with both. The cock is then turned, and the wine soon finds its level in the empty hogshead; then a large sized bellows, with an angular nozzle, and sharp iron feet towards the handle, which feet are forced down into the hoops of the cask on which it rests, in order to keep this bellows stationary, whilst the nozzle is hammered in tight at the bung hole of the racking hogshead; the bellows is then worked by one man, and in about five minutes the racking of the hogshead is completed. The pressure of the air introduced into the

hogshead, by the bellows, acts so forcibly on the surface of the liquor, that it requires but a few minutes to finish the operation; when the cock is stopped the hose taken off, and a new operation commences. This mode may possibly, in some cases, be advantageously applied to racking off beer, ale, or cider.

#### RULES FOR CONSTRUCTING WINE CELLARS.

*By Edward Barry, Bart.*

The size of the cellar ought to be in proportion to the quantity of wine for which it is designed; as it is more easy to defend a small cellar from the admission of a greater quantity of the external air, and to renew it occasionally, than one of the larger size.

The situation ought to be low and dry, therefore not on any great declivity, where the under currents from the superior ground must always keep it moist, and infect the air with its putrid exhalations, this communication however may be prevented by intermediate trenches.

A small anti-cellar, built before all large cellars, would be a considerable defence and improvement to them; in which a quantity of wine, sufficient for a few days, may be kept, and the necessity prevented of more frequently opening the large cellar, and admitting the external air; which must always in some degree alter the temperature of it, and in

sudden, or continued great heats, or frosts, may be particularly injurious to the wine.

It is usual to cover the bottles in the binns with saw-dust ; to which I should prefer dry sand, whose density is much greater. I saw a remarkable instance of the benefit arising from an intermediate defence of this kind. A hogshead of claret, which had been lately bottled, was heaped up in a corner of a merchant's common large cellar, with a view of removing it soon to the wine cellar. In the mean time, a load of salt, from the want of a more convenient place, was thrown on the bottles, and remained there several months before it was removed. The wine was afterwards found to be much superior to the wine of the same growth, which had been imported and bottled about the same time, and had been immediately placed in the wine cellar. The large quantity of salt formed a compact vault over the bottles, which entirely defended the wine from the influence of the air, though greatly exposed to it ; and probably the coldness of the salt contributed to this improvement.

The ancients certainly more effectually preserved their wine in larger earthen vessels, pitched externally, than we can in our bottles, as they are more capable, from their superior density and capacity, of resisting the frequent changes in the air ; and it is a common observation, that the wine, received into bottles which contain two quarts, proves better than that which had been kept in single quarts.

It appears to me very probable, that our best



modern wines, especially those of a delicate texture and flavour, may be more effectually preserved in earthen vessels, of a larger size than our bottles, well glazed externally and internally. The vessels of this kind, which were formerly used for this purpose, were pitched externally, and lined internally, on account of their being porous, and imperfectly vitrified; but our artists are arrived to such a perfection in this article of manufactory, that their glazed vessels are impervious to the air, and incapable of communicating any bad taste to any liquors contained in them; however, pitching them externally would be a greater defence, especially when the glazing is not equally firm.

The largest vessel in which the Greeks and Romans usually kept their wines in the vaults, was the Amphora, which contained ten gallons, or eighty Roman pounds. The Urna contained half that quantity. Several others were used of an inferior size, and gradually decreasing in the same proportion. They sometimes varied from this general rule, and made them of a finer earth, ornamented with different figures.

The form and capacity of these vessels is well known, and seems well adapted to the intention of them. They were regularly ranged in the cellar; and as their capacity gradually decreased to the bottom, whenever any lees had subsided there, on removing the vessel they were less apt to rise and mix with the wine, than when contained in bottles; the surface at the bottom being so much greater in

them, and the quantity of wine which they contain so much less. The wine was drawn from them by a syphon, and the opening at the upper part so large that they were easily cleansed ; and the size of the cork, well pitched, was a more effectual defence than our small corks.

In such habitations, where no vaults have been made, or can be conveniently constructed, an artificial wine cellar may be easily contrived, which may perhaps more effectually preserve the wine from the variations of the external air, than the common vaults, which are liable to many defects. These may be prevented, by burying these earthen vessels in cavities made in the ground, exactly adapted to the size and form of them, which may be lined with brick, or slate ; and so deep that the upper part of the vessels lodged in them be, at least, a foot and a half lower than the surface of the ground ; the intermediate space might be filled up with dry sand, over which a leaden cover may be placed, to mark the size of the vessel, and the time when it was buried there.

I am sensible that this plan, which I have only sketched out in a superficial view, is very imperfect, and capable of many improvements, in respect to the form and capacity of the vessels, and the materials of which they are composed. The form and size of the Amphora may be a proper one, when a great quantity of wine is deposited in large cellars. A hogshead of wine may be received into ten vessels, each of which contains somewhat more than

two dozen of our quarts ; neither would twenty of half their capacity take up any considerable space in a vault, or when buried under ground in any convenient ground-floor. Whenever any vessel is taken up for use, it may be suspended on the side of the cellar or anti-cellar, and the quantity of wine, which is occasionally wanted, drawn off by a syphon. It was usual to pour a small quantity of oil over the wine, especially when the pitched cork was removed, and it was designed for immediate use ; which, spreading over its surface, preserved it equally fresh, during the time of drinking it.

These vessels would be less expensive, and more durable than bottles, and less liable to frequent frauds, and a considerable waste of the wine, when decanted from bottles, in which a sediment had subsided. But these considerations are of another kind ; my intention is only to preserve the wine in a more healthy and firm state.

### WINE BITTERS.

Take one ounce of gentian root, one ounce of the yellow rinds of fresh lemons, two drachms of long pepper, one quart of white wine : steep them for six days, and strain it through a filtering bag or cap paper.

## **CIDER AND PERRY.**

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### **TO MAKE CIDER.**

Take red-streaked pippins, pearmaines, pennetings, golden pippins, &c. when they are so ripe that they may be shaken from the tree with tolerable ease, bruise or grind them very small, and when they are become a mash, put them into a hair bag, and squeeze them out by degrees : next put the liquor, strained through a fine hair sieve, into a cask well matched ; then mash the pulp with a little warm water, adding a fourth part when pressed out, to the cider. To make it work kindly heat a little honey, three whites of eggs, and a little flour, together ; put them into a fine rag, and let them hang down by a string to the middle of the cider cask ; then put in a pint of new ale yeast pretty warm, and let it purge itself from dross five or six days ; after which, draw it off from the lees into smaller casks, or bottles, as you have occasion. If you bottle it, take care to leave the liquor an inch short of the corks, lest the bottles burst by the fermentation. If any such danger exists, you may perceive it by the hissing of the air through the corks, when it will be necessary to open them, to let out the fermenting air. In winter, cover up the bottles and casks warm ; but in summer,

place them in as cold a place as you can, lest the heat should make them ferment and burst the bottles, or the liquor become musty. That it may the better feed, and preserve its strength, put a small lump of loaf sugar into every bottle

### ANOTHER WAY.

Take pippins, pearmain, or parreys, before they are fully ripe, and let them lie a day or two on a heap to sweat ; then grind them, press out the juice, and put it into a hogshead, leaving it room to work. Let it have no vent, except a little hole near the hoops ; and put in three or four pounds of raisins and two pounds of sugar, to make it work the better ; then rack it off, and in order to fine and mellow it, put a pint of finings to thirty gallons ; afterwards put it into small casks, close stopped, leaving a small hole as before, lest it should work after it is racked off ; then put into the cask a few raisins to feed it, and bottle it off about March.

You must never mix summer and winter fruit together ; but if you would have your cider stronger than by the common method of making it, put your apples into a lever press, squeeze them slightly, and let it work as before.

#### *To prevent the Fermentation of Cider.*

Let the cask be first strongly fumigated with burnt sulphur ; then put in some of the cider, burn



more sulphur in the cask, stop it tight, and shake the whole up together; fill the cask, bung it tight, and put it away in a cool cellar.

*To Manage Cider.*

To fine and improve the flavour of one hogshead; take a gallon of good French brandy, with half an ounce of cochineal, one pound of alum, and three pounds of sugar candy; bruise them all well in a mortar, and infuse them in the brandy for a day or two; then mix the whole with your cider, and stop it close for five or six months; after which if fine, bottle it off.

*To Restore Sour Cider.*

If cider gets tart or sour, mix a quart of honey with a quart of brandy or pure spirit, to which add a little salt of tartar, all mixed together, and put into the cask of cider, and it will bring it round again.

*To Fine and Purify Cider.*

When the juice of apples has not been well purified, it soon corrupts; the dregs which remain mixed with the liquor, being small pieces of the apples, which give the cider an unpleasant rotten taste. In order to purify it, use isinglass finings; and to prevent the cider from growing sour, put a little mustard in it. Apples of a bitter taste produce the strongest cider.

*To Clarify Cider.*

If it requires clarification it should be done with isinglass, or it may be leached through a tub of powdered charcoal, which will render it very clear; but the tub should be covered close to prevent any evaporation of the spirit. To clarify it with isinglass, pour into each vessel about a pint of the infusion of this glue in a little white wine, or rain or river water, stir it well together and then strain it through a linen cloth. This vinous substance spreads over the surface of the liquor, and carries with it all the dregs to the bottom.

*To Improve Cider.*

A quart of honey or molasses, and a quart of brandy or proof spirit, added to a barrel of cider, will improve the liquor very much, and will restore that which has become too flat and insipid. Add also an ounce of pearlash, to prevent it from growing sour.

*To Cure Cider which is Pricked.*

To prevent cider from becoming pricked, or to cure it when it is so. Put a little pearl ashes or other mild alkali into the cask. A lump of chalk broken in pieces, and thrown in, is also very good. Salt of tartar, when the cider is about to be used, is also recommended.

*To make a Cheap Cider from Raisins.*

Take fourteen pounds of raisins with the stalks, wash them out in four or five waters, till the water remains clear; then put them into a clean cask with the head out, and put six gallons of good water upon them; after which, cover it well up, and let it stand ten days; then rack it off into another clean cask, which has a brass cock in it, and in four or five days' time it will be fit for bottling. When it has been in bottles seven or eight days, it will be fit for use. A little colouring should be added when putting it into the cask the second time. This is a nice summer's drink: the raisins may afterwards be used for making vinegar. *See Vinegar.*

Cider or Perry, when bottled in hot weather, should be left a day or two uncorked, that it may get flat; but if it is too flat in the cask, and soon wanted for use, put in each bottle a small lump or two of sugar candy, four or five raisins of the sun, or a small piece of raw beef; any of which will improve your liquor, and make it brisker. Cider should be well corked and wired, and placed upright in a cool place. A few bottles may always be kept in a warmer place, to get ripe, and be ready, for use.

Perry is made after the same manner as cider, only from pears, which must be quite dry. The

best pears for this purpose are such as are least fit for eating, and the redder they are the better.

*To Refine Cider and give it a fine amber colour.*

The following method is much approved of. Take the whites of six eggs, with a handful of fine beach sand, washed clean ; stir them well together ; then boil a quart of molasses down to a candy, and cool it by pouring in cider and put it together with the eggs and sand into a barrel of cider, and mix the whole well together. When thus managed it will keep for many years. Molasses alone will also refine cider, and give it a higher colour, but to prevent the molasses from causing the cider to prick, let an equal quantity of brandy be put in with it. Skimmed milk, with some lime slacked in it, and mixed with it, or with the white of eggs with the shells broken in, is also good for clarifying cider, and all other liquors, when well mixed with them ; a piece of fresh bloody beef, cut into small pieces, and put into the cask, will also refine the liquor, and serve for it to feed on.

*To Cure Oily Cider.*

Take an ounce of salt of tartar, two and a half ounces of spirit of nitre, and a gallon of milk, mix the whole well together, and add it to a hogshead of cider, stirring it well together, and set it in a cool place in the cellar.

*To Cure Ropy Cider.*

Take six pounds of alum in powder, and stir it into a hogshead of cider, then rack it off and clarify it.

*To Colour Cider.*

Take a quarter of a pound of sugar, put it in a frying pan over a slow fire, and burn it black. Then dissolve it in half a pint of hot water, to which add a quarter of an ounce of alum to set the colour, when this is dissolved and the whole combined together, add it to a hogshead of cider, stir the whole well together, and set the cask in a cool place.

*To Improve and Strengthen Cider.*

Cider brandy, mixed with an equal quantity of honey, or clarified sugar, is much recommended for improving and strengthening common cider; so that, when refined, it may be made as strong, and as pleasant as the most of wines.

## THE ART OF MAKING AND BOTTLING CIDER.

[*From the American Farmer.*]

It would be needless to detail all the experiments I made to save my bottles; I will relate two that were very promising, which will show that no-



thing less than raising the proof of the cider will answer.

*Experiment 1.*—I bottled cider of fine quality, in February, with the best of corks, and removed it to the cellar; after the bottles were filled, they were placed in tubs of warm water, and raised to full summer heat, and then corked.

*Experiment 2.*—Considering that good corks would begin to stop the air in the neck of the bottle, before they were half driven in, and that a portion of air would be condensed, and therefore greatly endanger the bottles, when the temperature was increased, I procured perforated corks, and stopped the perforations, after they were driven in, with pegs, and sealed all over.

Neither of these probable experiments were effectual: every hot day was announced by an explosion in the cellar. Giving over every stratagem that had not an alteration of the liquor in view, it occurred to me that wines did not burst their bottles, and that cider was only a low wine; and also recollecting that small beer was both the weakest and most violently fermentative of all common drinks, I resolved to raise the proof of my cider, by the addition of two tea-spoons of French brandy to each bottle; since which, I have no more explosions nor broken bottles, and the cider is improved by the addition. Plums or honey, so much used, must have the same effect, *i. e.* to raise the proof; for it is only necessary to add a larger quantity of either to make cider into good wine, that will flash in

the fire. My method is to get cider made late in October or in November, from Red-streaks, Catalins, or Maiden's blush. In December, I put half an ounce of isinglass to each thirty gallons, and bottle it in February. If the isinglass is put in later, it will deposit some sediment in the bottles. It is to be dissolved by chipping it into fine pieces, and placing it in a covered mug with a quart of cider, for ten hours or more, in a very warm ashes heat, about as much as we use to draw tea; a little scalding of the corks, at the moment they are to be used, will soften them, so that they will fit better and be more readily driven in.

It would be needless to expect cider to be made good by bottling, it must be pure and well flavoured whilst in the cask; and therefore the subject necessarily involves the cider making, on which you have many excellent papers. Of what I understand of the making of cider, it appears that the later the apples hang on the trees, the more powerful will be the cider; hence the cider of France and other temperate countries, is said to be more powerful than ours; our summer apples, therefore, would not make good cider for bottling, because of their quickly arriving at perfection.

The cleaning of the liquor from the pumice is the main thing, when good, sound, late apples are used. It appears that cider made from sweet apples is much more apt to abound with pumice, whilst the acid and ascerb retain their pumice in the press; hence some very bad eating apples make excellent

cider. 'The attention to this subject, *i. e.* that the defalcation is all important, especially the first, if well timed and complete, the future fermentations will be moderate, and the racking effectual. Blankets have been used with success, to get off much of the pumice; they should be spread on the bottom of a flat basket, and that placed on the head of the cask. All strainers will require often washing out, and therefore two or three are necessary, all of which may be made from one stout blanket. But I am satisfied that a few hair sieves of different fineness, with the coarsest uppermost, placed under the run, would also require shifting with a second set, and constant attendance to wash them out; the size of rain sifters would answer; after these the blanket strainer would render the cider so pure, that fermentation would be gently and easily managed, so that the first racking and the isinglass would finish the fining.

Some persons are very much pleased to see cider rush out of the bottles like small beer; they think it strong; if they bottle it themselves they will find their mistake, and be better pleased to see a kind of sparkling fervour, like the wine of Solomon, "*that moveth itself aright.*"

#### *To Cleanse Musty Casks.*

The only successful method we have ever heard of, is as follows.

Make up in quantity what will be equal to about one sixteenth part of what the cask to be cleansed

will hold, of the following ingredients, viz. about four pounds of common salt, one pound of alum, added to a mixture of water with cow dung, fresh dropped from the cow, no other will do ; put the whole in a pot and heat it almost to boiling, stirring it constantly ; pour it thus heated into the cask, and shake it well, turning it round on every side, and continue shaking it every hour or two, taking out the bung while shaking, lest it burst. When its contents have become cold, pour them out, and rinse it clean ; then pour in some hot water, in which about two pounds more of salt and one pound more of alum have been dissolved ; shake the cask well on every side as before, and while the water is yet warm pour it out ; drain the cask and bung it up tight, till wanted for use.

This will not only make the cask perfectly sweet, but will restore cider to sweetness again, that has been injured by being put in a musty cask.

*To Cleanse Casks that Smell Sour.*

When casks have more or less of a sour smell, take at the rate of a pint of unslacked lime for a barrel, put it in, and pour in three or four gallons of hot water, shake it well on every side, giving it some vent as before mentioned ; let it stand till cold, and then rinse it with cold water. Repeat the operation if the cask does not smell perfectly sweet. Most probably a suitable quantity of wood ashes would more effectually eradicate any sourness in the cask.

*Cider Royal.*

To make cider royal add to a barrel of good cider well clarified six or eight gallons of good cider brandy, or good French brandy ; let the vessel be filled full, bunged tight, and set in a cool cellar, and in the course of a year, it will be a fine drink, if good rectified whiskey be used instead of brandy, it will answer very well.

*To bring on a Fermentation.*

Take three pints of yeast, for a hogshead, add as much jalap as will lie on a sixpence, mix them with some of the cider, beat the mass up till it is frothy, then pour it into the cask, and stir it up well. Keep the vessel full, and the bung open, for the froth and foul stuff to work out. In about fifteen days the froth will be clean and white, then to stop the fermentation, rack the cider off into a clean vessel, add two gallons of brandy, or whiskey to it, and bung it up. Let the cask be full, and keep the vent hole open for a day or two. By this process, cider that is poor and ill tasted, may be wonderfully improved. Let it be refined by some of the methods before described.



## MALT LIQUOR.

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### DIRECTIONS FOR BREWING ALE, BEER, &c.

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#### *Of the Nature and Property of Water.*

WATER out of rivers or ponds is the best, unless polluted by the melting of snow, or by water from clay or ploughed lands. Snow water will require a greater proportion of malt than others. If you have not river water, that from a pond, whose bottom is not too muddy, and which is fed by a spring, will answer the purpose, as the sun softens and rectifies it. Very hard water, drawn from a deep well into a wide cistern or reservoir, and exposed to the air and sun, with a little powdered chalk thrown in, may be used. Rain water is to be chosen next to river water; though all waters which will raise a lather with soap, may be safely used in brewing.

#### *How to choose good Malt.*

Malt is chosen by its sweet smell, mellow taste, round body, and thin skin. There are two sorts in use, the pale and the brown; the former of which is mostly used in private families, and the latter in public brew houses, as it appears to go further, and gives the liquor a higher colour. The sweetest

malt is that which is dried with oak or cinders ; in grinding which, see that the mill be clean from dust, cob-webs, &c. and set so as to crush the grain, without grinding it to powder ; for you had better have some small grains slip through untouched, than have the whole ground too small, which would cause it to cake together, and prevent the goodness from being extracted.

*How to choose good Hops.*

Hops are chosen by their bright green colour, sweet smell, and clamminess when rubbed between the hands.

*Of the Brewing Vessels.*

For a copper holding twenty gallon the mash-tub ought at least to contain four bushels of malt. The copper, with room for mashing or stirring, the coolers, and working tubs, may be rather fitted to the convenience of the room, than to any particular size, as if one vessel be not sufficient you may take another.

*Of Cleaning and sweetening Casks.*

If a cask, after the beer is drank out, be well stopped, to keep out the air, and the lees be suffered to remain in it till you want to use it again, you will only need to scald it well, taking care that the hoops be well driven on, before you fill it ; but should the air get into an empty cask, it will

contract an ill scent, notwithstanding the scalding : in which case, a handful of bruised pepper, boiled in the water you scald with, will remove it, though the surest way is to take out the head of the cask, that it may be shaved, then burn it a little, and scald it for use : if this cannot conveniently be done, get some lime-stone, put about three pounds into a barrel, (and in the same proportion for larger or smaller vessels,) put to it about six gallons of cold water, bung it up, shake it about for some time, and afterwards scald it well. Or, in lieu of lime, you may match it well, and scald it ; you will then find the ill smell entirely removed. If your casks be new, dig holes in the earth, and lay them in, to about half their depth, with their bung-holes downwards, for a week, after which, scald them well, and they will be ready for use.

*Of Mashing or Tacking your Liquor.*

Of two bushels of malt, and one pound and a half of hops, you may make eighteen gallons of good ale, eighteen gallons of good table beer, and nine gallons of small beer ; for which a copper containing twenty-four gallons would be most convenient ; you may heat your first copper of liquor for mashing, and strew over it two handfuls of bran or malt, by which you will see when it begins to boil, as it will break and curdle ; after which, it will be proper to be let off into the mash-tub, where it may remain till the steam is spent, before you put in your malt. Or, you may put in

one gallon of cold water, which will bring it sooner to a proper state for mashing, which you may begin to do immediately, stirring it all the while you are putting in the malt; of which, keep out about half a bushel, dry, to strew over the rest when you have done stirring, which will be as you have well mixed it with the liquor, and prevented it from clotting. After the dry malt is spread, cover your mash-tub with the malt-sacks or cloths, that you may lose none of the spirit, and let them remain for an hour; in the mean time, get another copper of liquor hot, and in an hour and a half begin to let off your first wort into your underback; then receive a pail of your first running, and throw it again upon the malt. You will find that the malt has sucked up one fourth of the first copper of liquor, it will therefore be necessary, in order to make up your quantity of wort for the strong ale, to add as much of the second copper, throwing it by bowlfuls over the malt, and giving it time to soak through, keeping it all the while running by an easy stream, till you perceive you have about twenty-two gallons, which in boiling and working will be reduced to eighteen gallons. If, while you are letting it off, you throw into the underback about half a pound of hops, it will be preserved from foxing, growing sour, or becoming ropy. Your first wort being all run off, you must fasten the tap of the mash-tub, and take the second mashing, stirring up the malt as you did at first; then cover it close for an hour and a half; put likewise the same quantity of hops in the under-

back, as you did for the first liquor; but if you intend to make nine gallons of small beer, one hour will be sufficient for the second to remain on the malt, but the third will require an hour and a half; and as it runs off you must repeat it again the second time, and it will be good beer. Meanwhile, fill your copper with the first wort, and boil it very briskly with another half pound of hops, taking great care to avoid the extremes of under or over boiling, as either of them will materially injure the ale; for if not boiled enough, the liquor will taste raw, sweet, and sickly, and cannot retain the virtue of the malt, nor be a wholesome drink. On the other hand, if it be suffered to boil too long, it will thicken, and be prevented from ever being fine in the casks, or agreeable to the palate. The breaking or curdling of the wort should be your guide; for if you boil the wort an hour, (which is the usual time,) and should take it out of the copper before it is broke or curdled, it will be mis-managed: but when it has boiled awhile, take some in a hand-bowl, at several times; and when you find it is broke into small particles, it is nearly enough; a few minutes longer will produce large flakes. This then is the time to strain it off, and put it into cooling tubs as shallow as possible, and as the liquor cools, it may be put into the working-tub, that the coolers or tubs may be at liberty for the other wort, which may be ready to strain off. As soon as your first wort is strained off, put in the second, with the same quantity of fresh hops as before, and one pound of molas-



ses. Your hops must never be boiled twice, and you must take care with this, as well as the first, when it breaks, to strain it off directly. The third wort will be too small to break, you must therefore boil it an hour, and when strained off, put it to cool in a shallow body as soon as possible, that it may be kept from foxing, which it is apt to do if put in too large a body; but if you have not convenience for this, take a hand-bowl, and keep stirring it up till it is cool enough to put your yeast in. In putting your wort together, take care not to disturb the sediment at the bottom of your tubs, but let it be taken off as clear as possible, as the want of this precaution will cause an undue fermentation, which must be avoided. When it is lukewarm, proceed to ferment it in the following manner: Procure a pint of yeast, and mix it with a quart of the wort with your hand in a bowl; then set the bowl to swim on the wort, and cover it up. In a short time it will work over, and set the whole to fermenting. When the yeast has taken effect, mix it all well together, afterwards setting the bowl to swim on its surface; then cover it, and in two days at most, it will be fit to tun into your casks; but immediately before you do this, take off nearly all the yeast; then take out also the liquor, but so gently as not to disturb the bottoms. It will work in the casks about a week, after which, put the bung in gently; and when it has done working, put the bung in very tight, with a piece of coarse cloth about it. In three weeks or a month it will be ready to tap; but

if in pegging the cask you find it not fine, let it stand a few weeks longer, when it will be both fine and pleasant.

If you would extract almost all the goodness of the malt in the first wort, for very strong beer, begin to let it off soon after you have mashed, (by a small stream,) throwing it upon the malt again as it comes out, for an hour, stirring it all the time : then let it run off by a small stream as before ; and when you have your quantity for strong beer, proceed in your second mashing in the same manner as the first. During the time of removing your liquor out of the copper, it is of importance to take care to preserve it from burning : in order to which, you should always contrive to have the fire low (or else to damp it) at the time of emptying, and to be very expeditious in putting in fresh liquor.

*Some Recipes for Fining Malt Liquor.*

To fine and improve a cask of beer, take an ounce of isinglass, cut it small, and boil it in three quarts of beer, till it is all dissolved ; let it stand till quite cold, then put it into the cask, and stir it well with a stick ; this beer should be tapped soon, because the isinglass is apt to make it flat as well as fine.

*Second.*

Put in two or three handfuls of small red sand, stirring it well, then bung it close down.

*Third.*

Boil a pint of wheat in two quarts of water, and squeeze out the liquid through a fine linen cloth. A pint of it will be sufficient for a kilderkin, and will fine and preserve it.

*Fourth.*

Take a handful of salt, and as much chalk scraped fine, and well dried: then take some isinglass, and dissolve it in some stale beer, till it is about the consistence of syrup: strain it out, and add about a quart to the salt and chalk, with two quarts of molasses. Mix them all well together with a gallon of the beer, which you must draw off, then put it into the cask, and take a stick, slit into four parts at the lower end, and stir it well about till it ferments. When it has subsided, stop it up close, and in two days you may tap it. This is sufficient for a butt.

*Fifth.*

Take a pint of water, and half an ounce of unslacked lime; mix them well together, letting the mixture stand for three hours, that the lime may settle at the bottom. Then pour off the clear liquor, and mix with it half an ounce of isinglass, cut small and boiled in a little water, pour it into the barrel, and in five or six hours it will become fine.

*To Fine Cloudy Beer.*

Rack off the cask, and boil one pound of new hops in water, with coarse sugar, and when cold, put it in at the bung hole.

Or new hops soaked in beer, and squeezed, may be put into the cask.

Or take six pounds of baked pebble stone powder, with the whites of six eggs, and some powdered bay salt, and mix them with two gallons of the beer, pour in the whole into the cask, and in three or four days it will settle, and the beer be fine and agreeable.

*To recover thick sour Beer.*

Make strong hop tea, with boiling water and salt of tartar, and pour it into the cask.

Or rack the cask into two casks of equal size, and fill them up with new beer.

*To recover Beer when Flat.*

Take four or five gallons out of a hogshead, and boil it with five pounds of honey; skim it well when cold, and put it into the cask again; then stop it up close, and it will make your liquor drink strong and pleasant.

*Second.*

Take two ounces of new hops, and a pound of chalk broken into several pieces; put them into the cask, and bung it up close. In three days it will

be fit to drink. This is the proper quantity for a kilderkin.

*Third.*

Take a fine net, and put into it about a pound of hops, with a stone or something heavy to sink it to the bottom of the cask. This is sufficient for a butt; but if your cask be less, use hops in proportion. Tap it in six months; or if you wish to have it fit to drink sooner, put in some hops, that have been boiled a short time in the first wort, either with or without a net.

There are two reasons why beer that is kept a considerable time, drinks hard and stale. The first is, the great quantity of sediment that lies at the bottom of the cask. When neglected to be cleaned, there is frequently found a pail full, and some times more. Now this compound sediment, of malt, hops, and yeast, so effects the beer that it partakes of all their corrosive qualities, which renders it prejudicial to health, generating various chronical and acute diseases; therefore during the whole process of brewing, mix not the least sediment with the wort, in removing it from one tub or cooler to the other; especially be careful when you tun it into the cask, not to disturb the bottom of the working tub, which would prevent its ever being clear or fine. The second reason is, keeping it too long in the working tub. Persons who make a profit of the yeast frequently promote an undue



fermentation, and keep it constantly in that state for five or six days : this causes all the spirit that should keep the beer soft and mellow to evaporate, and it will certainly get stale and hard, unless it has something to feed on that is wholesome, and better than its own natural sediment. I shall therefore give several receipts for this purpose, as follows.

*First.*

To a quart of French brandy put as much wheat or bean flour as will make it into a dough, and put it in long pieces at the bung hole, letting it fall gently to the bottom. This will prevent the beer growing stale, keep it in a mellow state, and increase its strength.

*Second.*

To one pound of molasses or honey, add one pound of the powder of dried oyster shells, or of soft mellow chalk, mix these into a stiff paste, and put it into the butt. This will preserve the beer in a soft mellow state for a long time.

*Third.*

Dry a peck of egg shells in an oven, break and mix them with two pounds of soft mellow chalk ; then add some water wherein four pounds of coarse su-

gar has been boiled, and put it into the cask. This will be enough for a butt.

Make use of any of these receipts which you most approve of; observing that your paste or dough must be put into the cask when the beer has done working, or soon after, and bunged down. At the end of nine or twelve months tap it, and you will find it answer your expectations. By adopting this method with beer, you will always have a fine, generous, wholesome, and agreeable liquor.

It is the practice of some persons to beat in the yeast, while the beer is working, for several days together, to make it strong and heady, and to promote its sale. This is a wicked and pernicious practice. Yeast is of a very acrimonious and narcotic quality, and when beat in for several days together the beer thoroughly imbibes its hurtful qualities. It is not discoverable by the taste, but is very intoxicating, and injures the whole nervous system, causing debility and all its consequences. Therefore let your wort have a free, natural, and light fermentation, and one day in the working-tub will be long enough in cold weather, but tun it the second day at the farthest, throw out the whole brewing, and afterwards introduce no improper ingredients. When you have occasion to fine, preserve, or recover beer, make use of any of the preceding receipts. If you are partial to a composition of many more ingredients than what is in beer, I would recommend Porter.

## TO BREW A HOGSHEAD OF PORTER.

Take two bushels and a half of high coloured malt, three pounds of hops, two pounds and a half of molasses, four pounds of colouring, two pounds and a half of liquorice root, one ounce of Spanish liquorice, and of salt, salts of tartar, alum, capsicum and ginger, of each a small quantity. The malt must be mashed in the same manner as in brewing ale, and the hops boiled also the same; and when boiling the other ingredients must be added. Porter must be fined as soon as it has done working, unless you intend to rack it off; in which case, defer the fining until that time. The fourth receipt for fining ale will answer also for porter. When you put in the finings, stir it well up with your staff, and let the bung remain out for nine or ten hours. Your butt must not be too full, for if there is not room for the porter to work, it will not readily go down.

*To ripen Ale or Porter.*

There are several methods of ripening ale and porter, if flat when bottled, among which are the following: When you are going to fill your bottles, put into each of them a teaspoonful of raw sugar, or two teaspoonfuls of rice, or wheat, or six raisins. Any of these will answer the purpose.

*To Bottle Porter, Ale, &c.*

In the first place your bottles should be clean,

sweet, and dry, your corks sound and good, and your porter or ale fine. When you fill the bottles, if for home consumption, they should not be corked till the day following; and if for exportation to a hot climate, they must stand three days or more; (if the liquor is new;) it should be well corked and wired; but for a private family, they may do without wiring, only they should be well packed in saw dust, and stand upright. But if you want some ripe, keep a few packed on their sides, so that the liquor may touch the corks, and this will soon ripen, and make it fit for drinking.

*For Brewing Spruce Beer.*

Take a pot and a half of the essence of spruce, (which is sold at the druggists',) eighteen gallons of water, eighteen pounds of molasses half a pint of good yeast, and half an ounce of isinglass, cut small, and dissolved into a jelly, with a little stale cider or perry. First boil your water, and then mix the molasses with it, and put in a cask, when nearly cold: mix up your spruce with a little of it, and put it in the cask with the yeast; then stir it well up, and let it work with the bung out for three or four days; after which put in the finings, and stir it about. Then put in the bung, and when it has stood ten days, bottle it off.

N. B. It should be drawn off into quart stone bottles, and wired.

*To Restore Musty Beer.*

Run it through some hops that have been boiled in strong wort, and afterwards work it with double the quantity of new malt liquor : or if the fault is in the cask, draw it off into a sweet cask, and having boiled half a pound of brown sugar in some water, say a quart, add a spoonful or two of yeast, before it is quite cold, and when the mixture ferments, pour it into the casks.

*To Enliven and Restore Dead Beer.*

Boil some water and sugar, or water and molasses together, and when cold, add some new yeast ; this will restore dead beer, or ripen bottled beer in twenty four hours. And it will also make worts work in the tun, if they are sluggish.

Or a small teaspoonful of carbonate of soda may be mixed with a quart of it, as it is drawn for drinking.

Or boil for every gallon of the liquor, three ounces of sugar in water ; when cold, add a little yeast, and put the fermenting mixture into the flat beer, whether it be a full cask or the bottom of a cask.

Or beer may often be restored, which has become flat or stale, by rolling and shaking the casks for a considerable time, which will create such a new fermentation as will render it necessary to open a vent peg, in order to prevent the cask from bursting.



*A Speedy Way of Fining and Preserving a Cask  
of Ale or Beer.*

Take a handful of the hops boiled in the first wort, and dried, half a pound of loaf sugar dissolved in the beer, one pound of chalk, and half a pound of calcined oyster shells, put the whole in at the bung hole, stirring them well, and then re-bunging. This preparation will also suit for racked beer; in putting in the hops it may be advisable to put them in a net with a small stone at the bottom so as to sink them, otherwise they will swim at the top.

*To Prevent and Cure Foxing in Malt Liquors.*

Foxing, sometimes called bucking, is a disease of malt fermentation which taints the beer. It arises from dirty utensils; putting separate worts together, in vessels not too deep; using bad malt; by turning on the liquor at too great heats, and brewing in too hot weather. It renders the beer ropy and viscid, like molasses, and it soon turns sour. When there is danger of foxing, a handful of hops should be thrown into the raw worts, while they are drawn off, and before they are boiled, as foxing generally takes place, when from a scantiness of utensils, the worts are obliged to be kept some time before they are boiled. When there is a want of shallow coolers, it is a good precaution to put some fresh hops into the worts, and work them with the yeast. If the brewing foxes in the tun

while working, hops should then be put into it, and they will tend to restore it, and extra care ought to be taken to prevent the lees being transferred to the barrels.

Some persons sift quick lime into the tun when the brewing appears to be foxed. If care is not taken to cleanse and scald the vessels after foxing, subsequent brewings may become tainted.

*Other Methods of Curing Foxing.*

Cut a handful of hyssop small, mix it with a handful of salt, and put it into the cask. Stir it and stop it close.

Or infuse a handful of hops and a little salt of tartar in boiling water; when cold, strain the liquor off, and pour it into the cask, which stop close.

Or mix an ounce of alum with two ounces of mustard seed, and one ounce of ginger; stir them in the cask, and stop close.

Or in a fortnight, rack off the foxed beer, and hang two pounds of bruised Malaga raisins in a bag within the cask, and put in a mixture of molasses, bean flour, mustard seed, and powdered alum.

*To Restore a Barrel of Ropy Beer.*

Mix a handful of bean flour with a handful of salt, and stir it in at the bung hole, or take some well infused hops, and mix them in with some settlings of strong wort, and stir the mixture in at the bung

hole. Or powder half an ounce of alum very fine, and mix with it a handful of bean flour.

*To Restore a Barrel of Stale or Sour Beer.*

Put a quarter of a pound of good hops, and two pounds of sound chalk into the bung hole; stop it close, and in a few days it will draw perfectly fresh. Or a small teaspoonful of carbonate of soda, may be mixed with every quart as it is drank.

*To Make a Butt of Porter Stout.*

Mix four gallons of molasses and some finings together, stir it well and put in the cask, in a week draw off the cask by a cock, inserted half way down.

*To Restore Frosted Beer.*

Such beer is usually sweet and foul, and will never recover of itself, but to remedy this make a pailful of fresh wort; into which put a handful of rubbed hops, and boil them half an hour. So that it may be very bitter, and when almost cold, draw a pailful from the cask, and refill it with the bitter wort. Fermentation will recommence, but when this is over, bung it up for a month. If it is not then restored, rack it off into another cask, and put into it half a peck of parched wheat, and one pound of good hops, dried, and rubbed, and tied up in a net. Bung it down, leaving the vent hole open for a day or two, and in a month it will be fine liquor.

*To Give New Ale the Flavour of Old.*

Take out the bung, and put into the cask, a handful of pickled cucumbers : or a sliced Seville orange, and either mode will add an apparent six months in the age of the ale.

*To Protect Malt Liquors against the effects of Electricity.*

As positive electricity, is nothing more than oxygenous gas, which, when accumulated in conductors by electrical action, effects all fluids, (as conductors,) and enclosed fermented liquors among the rest ; and as electrical action always takes place among the best conductors, so fermented liquors, whether in casks or bottles, may be protected from electrical action, (vulgarly called thunder,) by placing on the casks, or over the bottles, pieces, or rods of iron ; and such have been found, by experience, to serve as a sufficient protection against this pernicious influence.

*To give Beer a Rich Flavour.*

Put six sea biscuits into a bag of hops, and put them into the cask.

*Ale Bitters.*

Take one gallon of ale, four ounces of gentian root, and four ounces of fresh lemon peel. Let these

steep in the ale for ten days, then strain it through a bag, and bottle and cork it up for use. This is an excellent bitter for ale.

*To sweeten Stinking, or Musty casks.*

Make a strong lie of ash, beach, or other hard wood ashes, and pour it boiling hot, into the bung hole, repeating it as often as there is occasion.

*Second.*

Or fill the cask with boiling water, and then put into it some pieces of unslacked stone lime, keeping up the ebullition for half an hour. Then bung it down, and let it remain till almost cold. Then turn it out.

*Third.*

Mix bay salt with boiling water, and pour it into the cask, which bung down and leave it to soak.

Or unhead the cask, scrub it out, and head it again; put some powdered charcoal into the bung hole, and two quarts of a mixture of oil of vitriol, Then bung it tight, and roll and turn the cask for some time. Afterwards wash it well and drain it dry.

Or take out the head, and brush the inside with oil of vitriol, afterwards wash it, then burn a slip of brown paper steeped in brimstone, within the bung hole, and stop it close for two hours, when it should be well washed with hot water.



*Fourth.*

Mix half a pint of concentrated sulphuric acid, in an open vessel, with a quart of water, and whilst warm put it in the cask, and roll it about in such a manner that the whole internal surface may be exposed to its action. The following day add about one pound of chalk, and bung it up for three or four days. When it may be washed out with boiling water. By this process, a very musty cask may be rendered sweet.

For sweetening musty bottles, it will be only necessary to rinse the inside with the diluted sulphuric acid, in the above mentioned proportions. The addition of chalk, if it were immediately corked, would burst the bottle, and if the cask were old it would be advisable to let part of the gas escape before bunning it up.

*Fifth.*

Collect fresh cow-dung, and dilute it with water, in which four pounds of salt, and one pound of common alum are dissolved. Let these be boiled together and poured hot into the cask which must then be bunged and well shaken. This operation should be performed several times, taking care to rinse the cask out every time with clean water.

*Sixth.*

If a cask, after the beer is drank out, be well stopped to keep out the air, and the lees be suffered

to remain in it till used again, scald it well, taking care that the hoops be well driven on, before filling; but should the air get into an empty cask, it will contract an ill-scent, notwithstanding the scalding; In which case a handful of bruised pepper, boiled in the water, will remove it, though the surest way is to take out the head of the cask, that it may be shaved, then burn it a little, and scald it for use; if this cannot conveniently be done, get some lime stone, put about three pounds into a barrel, and in the same proportion for a larger or smaller cask. Put to it about six gallons of cold water, bung it up, shake and roll it about for some time, and afterwards scald it well. Or in lieu of lime match it well and scald it. Then the smell will be entirely removed. If the casks be new, dig holes in the earth, and lay them in, to about half their depth, with their bung holes downward, for a week. After which scald them well, and they will be fit for use.

#### *Seventh.*

The process of charring fails only in the fire not being able to penetrate into the chasms or chinks of the cask, into which the coopers (to mend bad work) often insert strips of paper, or other substance, to make it water tight, which in time often becomes rotten and offensive; in order to remedy this, put into a cask containing a quantity of water, (say about two gallons in a hogshead,) one tenth of its weight of sulphuric acid (oil of vitriol) and let

this be shook for some time; this is then to be poured out, the cask well washed, and then rinsed with a few gallons of lime water. It is needless to say, that it ought likewise to be well washed out.

Sulphur mixed with a little nitre, and burnt in a close vessel, and then the subsequent process of lime water, &c. would do, and perhaps as well.

The Theory is, that sulphuric acid, has the property, when used alone, of charring wood, and when diluted has sufficient strength to destroy must, &c. With the additional advantage of entering into every crevice. The lime in solution, seizes every particle of acid which the first washing might leave, and converts, it into an insoluble, inoffensive, neutral salt, such as if left in the cask, would not in the least injure the most delicate liquor.

*To keep empty vessels Sweet.*

An eminent London brewer, is so curious in this respect, that he makes use of a wooden bung, which, as soon as he has put into the vessel with some brown paper, he directly covers over with some wood ashes mixed with water, and puts it all about the same, with as much care as if the cask had been full of strong beer, though it is done only to keep the grounds sweet while they are so. And thus a vessel may be preserved in sound order for nearly half a year.

*To Make Purl Bitters.*

Take of Roman wormwood twenty-four pounds, gentian root six pounds, Calamus aromaticus, (or the sweet flag root,) two pounds, snake root one pound, horse raddish one bunch, orange peel dried, and juniper berries, each two pounds, seed or kernels of Seville oranges, cleaned and dried, two pounds, cut these and bruise them, and put them into a clean butt, and start some mild brown or pale beer upon them, so as to fill up the vessel, about the beginning of November, which let stand till the next season. If a pound or two of galanga root is added to it, the composition will be all the better.

*To Render Bottled Beer Ripe.*

The following method is employed in Paris, by some venders of bottled beer, to render it what they term ripe; it is merely by adding to each bottle, three or four drops of yeast, and a lump of sugar of the size of a large nutmeg. In the course of twenty-four hours, by this addition, stale or flat beer is rendered most agreeably brisk. In consequence of the fermentative process that takes place in it, a small deposit follows, and on this account the bottles should be kept in an erect position. By this means white wine may also be rendered brisk.

*Another Method of fermenting Strong Beer, that might be expected to produce a pure and excellent liquor.*

Mash, run down, and boil in the usual way ; suffer your worts, after drawing your fire, to remain on your copper two hours, doors and hatch open. If in winter, the deeper your worts lie on the cooler, the better ; when they have come down to the proper heat of pitching, give your yeast to them on the cooler, mixing it gently with the whole guile, and when properly headed with yeast, which will probably happen within twenty-four hours, run off your worts gently into barrels, leaving your top and bottom yeast on the cooler undisturbed, till all the cooler is cleared ; but previous to running your worts into the barrels, put half a pint of good solid yeast into each, and when full, clap your tin workers into the bung holes, and so let it finish its fermentation for about a week longer, filling the casks occasionally, as they work. When done working, bung down or vat them ; if you wish to add any kind of flavouring substance to this beer, the best time to do it is at commencing the second fermentation, experience teaching that all fermented liquors should have such substances added to them during, or at the commencement of their fermentation, which is perferable to adding these substances in the boil ; I mean spices, and delicate flavouring substances.



*Process of Brewing Windsor Ale, on a small scale*

Windsor ale is a very pale, light, agreeable ale, as fine as wine, and unquestionably the best fermented of any malt liquor sent to the London market.

Length drawn, three barrels per quarter of eight bushels ; the malt pale, with two pounds of hops of the first quality ; heat of the first liquor 182, two barrels of which is generally allowed to each quarter of malt, for the first mash ; one barrel per quarter for the second ; the same quantity for the third is as little liquor as can be dispensed with in three mashings ; for short liquor and stiff mashings are essential to this quality of ale, in order to leave as little as possible in the copper for evaporation, on account of the short boiling. Mash quick, run down quick, get your wort as fine as possible into your underbank ; let your first mash stand two hours, your second, one hour and three quarters. Give your second mashing liquor at 190 ; if you mash a third time, give your liquor at 175 ; stand half an hour ; these worts should be pitched from 52 to 60, but not higher. The mode of doing so is also different from the generality of other malt liquor ; your yeast should be fresh, smooth, and solid. Begin yeasting this ale a few barrels at a time, and when that has caught, add the remainder gradually, in about 48 hours, or from that to 60. This guile of ale will assume a close head of yeast, which should be carefully skimmed off as fast as it

forms after the first skimming : by this is not meant the first or worty head formed soon after the yeast has taken, but the close yeasty head already mentioned, which usually takes the time stated, say from 48 to 60 hours, when no more yeast rises, and the guile remains quite flat ; you will find the heat you pitched at, say 56, 58, or 60 degrees, will by this time have increased to 80, or even more, and the specific gravity of the wort diminished from 26 or 27 pounds per barrel, to six or seven pounds per barrel ; this attenuation will give it all the pungency and spirituousity it stands in need of. At this time your cleansing operation commences ; after which it will work but little in the casks. It should be filled regularly every two or three hours, after cleansing, for the first twenty-four. After it has done working, you should immediately start it into an air-tight vat, with about one pound of hops well rubbed to every three barrels of ale in your brewing ; if you use spent hops, such as has been boiled on the first mash, you may use a greater quantity, say half a pound more to each three barrels of beer, taking the precaution that they are become quite cool. This ale, thus treated, will be found glass fine in the course of a fortnight, and fit to be racked off into hogsheads or barrels. It will improve by age, both in flavour and quality. But it should not be boiled more than fifteen minutes.

*Strong Beer, of an excellent quality and flavour, brewed from the Extract of the Hop only, rejecting the substance.*

This extract was obtained by the hot infusion, in a close covered wooden vessel, set to infuse the evening before brewing. In this process one third more hops should be allowed ; these hops need not be wasted, as they will answer well for table beer, or single ale, brewed according to the preceeding processes ; but, in either case, one hour's strong boiling will answer for single ale, half an hour for table beer, will be sufficient, on account of the increased quantity of hops.

When you have got up your first wort in your copper, that you intend to preserve with extract, boil the first half hour without it, and one hour with it, very hard in both instances. It should have been mentioned, that in preparing your first or masking liquor, two pounds of rice is to be added to your water in the copper before boiling, supposing the length of your brewing 20 barrels, or in that proportion.

Strong beer brewed with the extract alone, as here recommended, has turned out remarkably well, and if the hops are good, will be found more delicately flavoured than any other beer ; supposing the malt alike good. Pitching, cleansing, and filling, to be conducted as already recommended in preceding processes, with the tun close covered during the fermentation.

*Mead or Metheglin.*

For every pipe of mead allow one hundred and sixty-eight pounds of honey. On a small scale, take ten gallons of water, two gallons of honey, with a handful of rased ginger, and two lemons, cut them in slices, and put them, with the honey and ginger, into the water; boil for half an hour, carefully skimming all the time; use a strong ferment, and attenuate high, not under seventy-eight; in the boiling add two ounces of hops to the above ten gallons of water and two gallons of honey. In about three weeks, or one month, after cleansing and working off, this mead will be fit to bottle. This liquor, when thus made, is wholesome and pleasant, and little, if any, inferior to the best white wines. It is particularly grateful in summer, when drank mixed with water.

*To Recover Sour Beer.*

Put in some oyster shells, calcined to whiteness, or in place thereof, a little fine chalk or whiting, either of which will correct the acidity, and make it brisk and sparkling.

*Heading*

Is variously composed, and differently prepared, what is here recommended will be found safe and effectual. Porter or brown stout, when intended for draught, should never be sent out into the cask

without fining and heading. The usual practice is to put your heading into your fining, and so both into the cask just before filling up and bunging down. The proportion for one hogshead of sixty-three gallons, is three half pints of fining, with as much heading put into the fining, as you can take up upon a cent piece; the heading here recommended, is composed of equal parts of sal martus (or green copperas) and alum, both finely powdered, and mixed in equal parts, so as to be intimately blended with each other before using. The advantages derivable from heading are merely apparent, giving a close frothy head to the beer in the quart or mug it is drawn in, supporting the vulgar prejudice, that such beer is better and stronger than that where no such appearance manifests itself.

### *Bottling Beer.*

This is a branch of trade, that under proper management, might be made very productive and profitable, whereas, in the manner it is now generally conducted, proves a losing one, occasioned by the great breakage of bottles, arising from the impure state of the beer at the time of putting into bottle. In consequence of this bad management, I have known a person extensive in the trade, to lose, on an average, from two to three dozen bottles, as well as beer, on every hogshead he put up which happened to lie over till summer, or was bottled in that season; this loss was too heavy to expect much profit from a business so conducted. To obviate both



these consequences, I would recommend beer, ale, and porter, intended for the bottle, to be carefully filtered through charcoal and sand, as directed in the operation of filtering; being thus purified from all its feculencies and fermentable matter, it will be in the best possible state for taking the bottle, in that mild and gentle way that will not endanger the loss of one or the other. It will further have the good effect of recovering the beer or ale, thus filtered, from the flatness that will necessarily be induced by that operation, giving the liquor all the briskness and activity that can be wished for. If beer, porter, or ale, be intended for exportation to a warmer climate than our own, the operation will be found particularly suited to it. Choose your corks of the best quality, and steep them in pure strong spirit, from the evening before you begin your bottling operation; this precaution is essentially necessary to all beer intended to be shipped, or sent off to a warmer climate than our own, such as the East and West Indies, South America, &c. In more temperate climes, the simple precaution of filtering alone will be found to answer every necessary purpose, without steeping the corks in spirits. But suppose you bottle for home consumption, in that case you will naturally wish to have your beer, ale, and porter, get up in the bottle in as short a space of time as possible; in that case you should pack away your bottles in dry straw in summer, in saw dust in winter, as your object at that season will naturally be rather to accelerate than

retard fermentation; here you should carefully watch its progress from day to day, by drawing a bottle from the centre of the heap, as nearly as you can get at it; place this bottle between you and the light, and if you perceive a chain of small bubbles in the neck of the bottle, immediately under the cork, you may conclude your beer is up in the bottle, then draw a few more bottles, and if the same appearance continues in them also, it is time to draw all your bottles from the heap they were originally packed in, and set them on their bottoms in a square frame, ten inches deep, size optional; fill up this frame with the bottles of porter, or ale: so drawn in a ripe state, then get one or more bushels of bay salt, and scatter it as evenly as you can over the bottles, until the space between their necks is nearly half filled; then another course of bottles may be sunk between these, with their necks down through the salt, so as to form an upper tier; thus treated, not a single bottle will be found to break from the force of the fermentation, and the salt will answer for a fresh supply of bottles, as often as you may find it necessary to draw, or send them out, this quantity will answer your purpose for years, if you only keep it dry. Another advantage, and no small one, derivable from a bottling operation conducted in this way, will be, that a loft will be found more convenient for the purpose than a ground floor, as less damp, and more likely to preserve the salt dry, which a more moist atmosphere would naturally dissolve.

The practise here recommended may, with equal success, be applied to cider and perry.

*Table Beer.*

Table beer, of a superior quality, may be brewed in the following manner, a process well worth the attention of the brewer, the gentleman, and the farmer; whereby the beer is altogether prevented from working out of the cask, and the fermentation conducted without any apparent admission of the external air. I have made the scale for one barrel, in order to make it more generally useful to the community at large; however, the same proportions will answer for a greater or less quantity, only proportioning the materials and utensils. Take one peck of good malt, ground, one pound of hops, put them in twenty gallons of water, and boil them for half an hour; then run them into a hair cloth bag or sieve, so as to keep back the hops and malt from the wort, which, when cooled down to 65 degrees by Fahrenheit's thermometer, add to them two gallons of molasses, with one pint, or little less, of good yeast; mix these with your wort, and put the whole into a clean barrel, and fill it up with cold water to within four inches of the bung hole, (this space is requisite to leave room for fermentation,) bung down tight, and if brewed for family use, would recommend putting in the cock at the same time, as it will prevent the necessity of disturbing the cask afterwards; in one fortnight this beer might be drawn, and will be found to improve to the last.

*Fermenting and Cleansing in the same Vessel.*

The following recommendation to brewers is well worth their attention; that is, to ferment their strong, or what they call their stock beer, in the vat they propose to keep it in, until fit to turn out; this practice will be found advantageous to the flavour and preserving quality of such beer, as close fermentation has a decided preference over what is termed open. One or more workers may be placed in the side of such vat, a few inches above the surface of the enclosed liquor; thus the head as it rises will have the opportunity of running off; such fermentation should further be conducted coolly and slowly, the pitching heat, in this case, should exceed 60 degrees of Fahrenheit, and the yeast one third in quantity less than if applied in open vessels, but the yeast should be mixed with a double quantity of the wort at 65, in a separate vessel, before pitching. When vats are wanting, the operation may be conducted in hogsheads or butts, allowing a tin or wooden worker to each cask. In brewing small quantities of strong beer, this contrivance supersedes the necessity of fermenting tuns, or troughs, no small saving of expense, whilst it makes the beer more spiritous and preserving.

## VINEGAR.

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*Vinegar* is a penetrating liquor, made from wines, perry, porter, ale, sugar, raisins, gooseberries, currants, cowslips, &c. and is of great use and value, both for sauce, pickling, and medicine. The following recipes will be a sufficient guide in making and managing it in the cheapest, easiest, and best methods.

### *Wine Vinegar.*

Take of any sort of wine that has gone through fermentation, and put it in a cask that has had vinegar in; then take some of the fruit or stalks of which the wine has been made, and put them wet into an open-headed cask, in the sun, with a coarse cloth over the top of it, for six days; after which put them in your vinegar, and stir it well about; then put it in a warm place, if in winter, or if in hot weather, put it in a yard, in the sun, with a slate over the bung. When your vinegar is sour enough and fine, you may rack it off into a clean sour cask, and bung it up; then put it in your cellar for use.

N. B. The lees of pricked wine is a very proper ingredient in vinegar.



*Cider Vinegar.*

The poorest sort of cider will serve for vinegar, in managing which, proceed as follows : First draw off your cider into a cask that has had vinegar in before, then put some of the apples that have been pressed into it, set the whole in the sun, and in a week or nine days it may be drawn off into another cask. This will make good table vinegar.

*Vinegar from the refuse of Fruits.*

Take the skins of raisins after they have been used in making wine, and pour three times their own quantity of boiling water upon them ; stir them well about, and then set the cask in a warm place, close covered, and the liquor in a few weeks time will become a sound vinegar, which drawn off from its sediments, put into another cask, and well bunged down, will be a good vinegar for a table.

*Vinegar from Beer.*

Take a middling sort of beer, well hopped, and when it has worked well and is become fine, put some grapes or raisins with their stalks into it, to every ten gallons of beer a pound ; then stir them well about in a tub, and when the sediment has settled to the bottom, draw off the liquor into another cask, and set it in the sun with the bung out, and a slate on it. In about a month or six weeks, it will be a very good vinegar, and when ready, draw it

off into another cask, bung it well up, and keep it in your cellar for use. This will do for pickling.

*Raisin Vinegar.*

To every gallon of spring water, put three pounds of Malaga raisins, in an earthen jar, and place them where they may have the sun from May to Michaelmas; then press it all very well, and tun the liquor up into a strong iron-bound cask, to prevent it from bursting. It will be very thick and muddy when first pressed, but will become fine in the cask, where it must remain untouched for three months, before it be drawn off, when it will prove an excellent vinegar for table use.

*Another Vinegar from Raisins.*

Take what quantity of water you please, put it into a jar, and to every gallon of water put two pounds of Malaga raisins; then cover your jar up, and set it in the sun, or a warm place, till it is fit for use.

*Third Vinegar from Raisins.*

When the raisins of which your cider was made (see cider) have remained dry in an open headed vessel, for fourteen days from the time your cider was drawn off, in order to become sour, then put of the same liquor of which your cider was made, (or water,) as much as will cover the raisins, and let it

stand covered with a coarse cloth fourteen days, in which time it will become a fine and pleasant vinegar, and may then be bottled off for use, and will improve the longer it is kept.

*Gooseberry Vinegar.*

Take some gooseberries, fully ripe, and bruise them all to a mash; then measure them, and to every quart of gooseberries put three quarts of water, (first boiled, and let it stand till cold,) let it stand twenty-four hours, then strain it through a coarse cloth, and to every gallon put one pound of brown sugar; then stir it well together, and put it in a cask or jar, covered up in a warm place for three quarters of a year, in which time it will be fit for use; but if it stands longer it will improve. This is good for pickling.

*Currant Vinegar*

May be made in the same way as that from gooseberries, only pick off the currants from the stalks.

*Vinegar from Sugar.*

To an eighteen gallon cask put seventeen gallons of soft water, and seventeen pounds of brown sugar, into your brewing copper, and as it boils, skim off the scum till none appears; then lade it into one of your tubs, and let it stand till it is milk warm; then rub over a toast of brown bread, some good ale yeast on both sides, and put it into the liquor, cov-

ering it with a cloth, and let it remain a night and a day ; then take the yeast clean off, and place your cask on a stand, with a tile or a piece of lead on the bung-hole, in a warm spot, where it will get the benefit of the sun. The best time to make it is in March or April. Observe, your cask must be well iron bound, and painted ; this will make it last a deal longer : do not draw it off till July or August, but you may tap it a month before you draw it off, and take out a quart or two to taste, and put it in again ; it will help to fine it.

*Receipt for helping Vinegar to sour.*

You can scarcely ever turn some vinegar without fermentation ; for this purpose, use any of the following means : The dregs of any acid wines, the lees of vinegar, pulverized tartar, vinegar itself, a wooden vessel well rinsed with vinegar, or one that has long been employed to contain it, stalks of raisins, the husks of grapes, which are generally brought to this country for that purpose, currants, cherries, or other vegetables of an acid taste, baker's leaven, after it has turned sour, or any of the above mixed together. It often happens that a thick skin will come on the top of the vinegar. When you perceive this, you must frequently put it down very gently to the bottom, as, if you neglect this, it will grow very thick, and become of a green and blue colour, which will putrify, and take away the acid from the vinegar ; but by keeping it well down, that will be prevented.

## **BRANDY.**

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Brandy is a spiritous and inflammable liquor, obtained by distillation from wine. French brandies are accounted the best in Europe : and those of Bordeaux, Rochelle, Cogniac, Charenten &c, are held in the highest estimation. Good brandy is clear, not too hot, nor sharp, and of a pleasant vinous flavour. French brandy acquires by age a great degree of softness, and at the same time a yellowish brown colour, which our distillers have imitated in their artificial preparations. But this colour being found only in such brandies as have become mellow by long keeping, it follows that the ingredient from which it is extracted, is the wood of the cask, and that the brandy in reality has received a tincture from the oak. The peculiar flavour which French brandies possess, is supposed to be derived from an essential oil of wine, mixed with the spirit ; but more probably, it originates from the very nature of the grape, or the wine lees. The colour however, is usually given by burnt sugar. It deserves to be remarked, that our distillers frequently make use of the spirit of nitrous æther, commonly called dulcified spirit of nitre, a very small proportion of which, added to pure whiskey, or a liquor obtained by the distillation of malt, imparts to it a flavour not unlike that of French brandy. Brandy and rum, even of the most genuine kind, are less



wholesome than gin, malt spirits, or rye whiskey. The counterfeit and adulterated sorts are exceedingly detrimental to those who are habitually addicted, to the use of this pernicious liquor. It should therefore be drank very moderately, rather from necessity than for gratification. When the stomach is empty, weak and lax, a moderate dram excites a pleasant warmth and gentle tension; it is said to promote digestion, by dissolving the viscid phlegm which loaded that organ, invigorating its fibres, and stimulating its coats to act with more vigor. Yet all these good effects will not counterbalance the mischiefs done by an indiscreet and immoderate use of this cordial. Malancholy tempers, as well as choleric and sanguine habits, cannot fail to be injured by ardent spirits; and in short, a too free use of them in any constitution, is of the most fatal consequence. Hence Sydenham with great justice and propriety exclaims, "would to God brandy were totally abstained from, or used only on occasions to support nature, and not destroy it; unless it were thought proper to prohibit any internal use of it at all, and leave it entirely to surgeons for bathing ulcers and burns." Brandy has the property, more than any other spirit, of subduing venereal appetite, and the vital powers in this respect. One wine glass added to half a gallon bowl of punch, highly improves the flavour of that drink. In Virginia, peach brandy has long been distilled, and might be made a very profitable article of internal commerce, as the peach tree ap-

pears to thrive better in that state than in any other in the union.

Excellent brandy is made from apples, in the United states, notwithstanding what Chaptal has said on the subject. If carefully distilled from sound apples, and kept a few years in a warm situation, it is very agreeable, when diluted with water. Peaches also yield a liquor, which when properly distilled, is by many preferred to the finest French brandy.

*An Improved Method of Lowering Brandy down to Proof.*

This spirit is now in great estimation. There are many sorts of it, the produce of several countries, as France, Spain, Portugal, Italy, &c. but those which are universally acknowledged to be the best, are the French brandies, for their excellent flavour and purity, and are made at Bordeaux, Bayonne, Blois, Anjou, Poictou, Sacens, Cogniac, and the Isle of Rhe; and of these different places that which excels, and is in most esteem for its flavour and purity, is that from Cogniac, brought down the river to Rochfort, and from thence shipped to different places. When imported to this country, it is one gallon to ten over proof; but this is generally brought down to one in seven under proof; therefore observe the following rule. If you purchase a piece of brandy containing 130 gallons, at 1*l.* 1*s.* per gallon, of the strength of 1 to 10 over proof, proceed as follows: First, divide the 130

by 10, and the quotient will be 13, which added to the 130, makes 143 gallons of proof brandy; to reduce which to 1 in 7 under proof, you must divide the 134 by 6, and you will find the quotient to be  $23\frac{5}{6}$ , which added to the 13 makes  $36\frac{5}{6}$ , therefore the 130 gallons of escape brandy, will take 36 gallons and nearly 7 pints of water, to bring it to the strength generally sold by the wholesale dealers: so that a purchaser of a piece of brandy, of the strength of 1 to 10 over proof, gains 36 gallons 7 pints, which, at 1*l.* 1*s.* per gallon, makes the sum of 38*l.* 14*s.* 4*d.* and this, without any adulteration with British spirits or low brandies, besides the gain of two or three gallons in the guage.

Should your brandies have an unpleasant flavour, take ten pounds of sugar-candy, and dissolve it in warm water; take likewise the same quantity of prunes, and bruise them till the stones are all broken; then put it to your piece of brandy, and stir it well about, that it may be mixed. It will be greatly improved by it. French brandy may also be mixed with Cette or Spanish brandies, which are a great deal cheaper.

#### IMITATION BRANDY.

Imitation brandy is made by running malt spirits through fresh charcoal, adding to each ten gallons, a pint of the tincture of bitter almonds, and a sufficient quantity of colouring, and one fourth of good French brandy.

*Second.*

As French brandy is somewhat expensive, it may not be amiss to mention, that a very pleasant spirit, resembling that liquor in taste, may be made of the spirit distilled from cider, by putting into it a suitable proportion of dried peaches, baked brown, but not burnt; about half a gallon of these, or perhaps less, will impart to a barrel of this distilled spirit, a very pleasant taste, smell and colour, after the liquor has had time to ripen by age. Whether this liquor, thus prepared, will precisely supply the place of French brandy, is not particularly known, certain it is, however, that when it has age, it has much of the brandy flavour, and is full as pleasant as that liquor. Common whiskey also, when divested of its essential oil, may in like manner be turned into a pleasant brandy, after it has acquired sufficient age.

*Third.*

Take a hogshead of rectified spirits, to which add four pounds of salt of tartar, as an additional rectifier. Then take three pounds of orris root, three pounds of bitter almonds, ten pounds of prunes, two gallons of wine vinegar, three and a half pounds of saltpetre, three and a half pounds of figs; add these altogether, and distil with a strong heat until the feints rise, and colour with highly burnt brown sugar.

## BRANDY.

### *Fourth.*

Take sixty gallons of clean rectified spirit, one pound of sweet spirit of nitre, two pounds of red tartar in fine powder, one pound of ground cassia buds, one pound of bitter almond meal mixed together, two ounces of sliced orris root, about thirty or forty prune stones pounded; agitate the whole together, two or three times a day for a week; let them settle, then put in one gallon of the best wine vinegar and add to every four gallons one gallon of French brandy.

### *Fifth.*

The best, and indeed the only method of imitating French brandy to perfection, is by an essential oil of wine, this being the very thing that gives the French brandies their flavour; it must however be remembered, that in order to use even this ingredient to advantage, a pure tasteless spirit must be first procured; for it is not likely that this oil should give the flavour of French brandies to any one of our foul malt spirits. The best spirit to convert into French brandies are these; cider spirit, raisin spirit, or crab spirit.

Also a spirit distilled from natural grapes of this country, will prove preferable to any, providing they can be procured in sufficient quantities to make it an object to the distiller.



## TO IMITATE FOREIGN SPIRITS.

A great desideratum among distillers, in this country, is to imitate foreign spirits, such as brandy, rum, geneva, &c. to a tolerable degree of perfection; but notwithstanding the numerous attempts that are daily made for this purpose, the success in general has been indifferent. The general method of distilling brandies in France, differs in nothing from that practised here with malt wash or molasses; nor are the French distillers in the least more cleanly in their operations. Still though brandy is distilled from wine, experience tells us that there is a great difference in the grapes from which the wine is made. Every soil, every climate, every kind of grape, varies with regard to the quantity and quality of the spirit distilled from them. A large quantity of brandy is distilled in France during the time of the vintage, from the poor grapes that are unfit for wine; they are usually first gathered, pressed, their juice fermented, and instantly distilled. It is a general rule with them, not to distil wine that will fetch any price as wine; for in this state, the profits obtained are much greater than when the wine is reduced to brandies.\*

## TO IMITATE FRENCH BRANDY.

Gin, Brandy, and Jamaica Rum, have been so well imitated as to deceive very good judges, but so

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\* For a long time, this liquor was distilled only from spoiled wine, and afterwards from the dregs of beer and wine, and when instead of these, the distillers employed rye, wheat, and barley, it was considered as a wicked and unpardonable use of corn.

many unsuccessful attempts have been made by unskilful and injudicious operators, that a prejudice has arisen against what is termed patent brandy, which is heightened by the general dislike of the mixture and adulteration of spirits.

The usual method is to mix one gallon of the brandy or spirit to be imitated, with two gallons of rectified or neutralized spirit ; which is its most appropriate name ; the proper proportions, however, must depend upon the purity of the neutralized spirit, and the relative flavour of the brandy, or other spirit which may be used ; as the greater the quantity of the essential oil it may possess, the smaller proportion will effectuate the purpose ; much then depends on the quality of the ingredients, and it is requisite that the operator be a man of correct taste, to be able properly to apportion them. But as all spirit is radically the same, receiving its peculiar flavour from the presence of an essential oil, a certain portion of which is necessary, it is evident that no attempt at imitation can be completely successful, without having this due proportion of essential oil.

Thus, although a mixture of one gallon of French brandy, and two gallons of neutralized spirit, will smell exactly like brandy, yet will there be deficiency of two third parts of essential oil, which will, however, be only detected when mixed with water, and by one accustomed to the full, luscious taste given by the essential oil of Bordeaux, or Cogniac brandy. An ingredient, therefore, possessing the

flavour of brandy, is here wanted to supply this deficiency ; none such has as yet been discovered in this country. It is obtained in England by fermenting dried wine lees, and extracting therefrom a spirit strongly impregnated with the essential oil, of which a sufficient quantity is added to the neutralized spirit to give it the desired flavour.

These lees may be imported from France, but the American distiller who makes the attempt, must be careful to have the kind designated, lest he may through ignorance or mistake, endeavour to make Cogniac brandy from Bordeaux lees.

A spirit may also be obtained by fermenting raisins with water, and a small quantity of sugar, which will be highly serviceable. Another method is to scorch or partially burn a quantity of prunes, and infuse them in the neutralized spirit. They impart a rich luscious flavour, and the addition of about one eighth part of strongly flavoured French brandy, renders the imitation very complete. But this plan is objectionable, on account of the cost of prunes, and the trouble of preparing them.

The quantity necessary can alone be determined by experiment.

To give an agreeable vinosity to this brandy, a little sweet spirits of nitre may be added, the proportion according to the quantity of brandy made.

### *Second.*

First obtain neutral spirits ; add thereto refuse raisins sufficient to give the whole the flavour of

the grape; let the raisins and pure spirits be run through a still, the liquor reduced to first proof, and coloured with Gum Kino dissolved with spirits of wine, or strong brandy; add, by way of heightening the flavour, a small quantity of Orris Root.

*To imitate Cogniac Brandy.*

Clean, pure neutralized spirits, with proper management, are convertible into brandy, hardly distinguishable from foreign brandy, provided the operation is neatly performed. The best, and indeed the only method of imitating the French brandies to perfection is, by an essential oil of wine, this being the very ingredient which gives the French brandies their flavour; it must however be remembered, that in order to use even this ingredient to advantage, a pure tasteless spirit must be produced.

*How to prepare the Essential Oil of Wine.*

Dissolve some cakes of dry wine lees, in six or eight times their weight of water, let them remain until a proper fermentation has taken place, then distil the liquor by a slow fire, and separate the oil by a separatory glass, or pot, reserving that which comes over first, for the nicest purposes, the succeeding oil being coarser and more resinous. This oil of wine should be dissolved and kept in three times its weight of alcohol, otherwise it will soon grow rancid.

To imitate Cogniac brandy, it will be necessary



to distil the essential oil from such lees as you wish to use ; for instance, in order to make Cogniac brandy, you must distil the oil from Cogniac lees, if you wish to make Bordeaux brandy, distil the oil from Bordeaux lees, and so on for any other kind of brandy you wish to imitate. The proof may be easily accomplished by using a spirit rectified above proof ; which, being intimately combined with the essential oil, may be reduced to a proper standard by distilled water. The softness may, in a great measure, be obtained by distilling and rectifying the spirit over a gentle fire ; and what is wanting, when the spirit is first made, will be supplied by time. Molasses, or burnt sugar gives the spirit a fine colour, nearly resembling that of French brandy ; but as its colour is deep, a large quantity must be used : and the bubble proof is greatly heightened by the tenacity imparted to the liquor by the molasses, while the spirit acquires from the mixture a luscious taste. A much smaller quantity of burnt sugar than of molasses will however be sufficient for colouring the same quantity of spirits, and it acquires an agreeable bitterness. But it ought to be observed, that it is highly necessary, in all cases of making colouring from molasses, to be particular in making use of sugar house molasses instead of the common kind, they will answer much better, and also a less quantity will serve. It is by far the best and safest way, in order to succeed in these experiments always to make use of the best articles. The difference



of price being no object in these experiments, as the best articles, in the end will be found to be by far the cheapest.

The burnt sugar is prepared by dissolving a proper quantity of sugar in a little water, and scorching it over the fire, till it acquires a black colour.

But to return. The essential oil of wine is a very precious liquid, kept as a secret in the hands of some dealers in spirits, and used to give the brandy flavour to spirits of less price. It is certain that all the spirits we use, take their flavour from the essential oil of the substance they are made from, that of malt is very nauseous and offensive, and renders the spirit horribly disagreeable, if not carefully kept back in the distilling of it; that of the grape on the other hand, is extremely agreeable, and is what gives the delicious flavour to French brandies, this therefore is to be carefully brought over among the spirit, in distillation. This is that essential oil of wine so much celebrated among our distillers, and is for their use made separate, and is of such effect, that half an ounce of it, will determine a pure and clean malt spirit to be French brandy; so as to stand the test of the nicest palate, and all the trials that can be invented, provided the oil and the spirit have both been carefully made. But in the management of this business several things must be observed in order to render it successful; 1st. The wine lees must be of the right kind, that is, (as has before been ob-

served,) of the same nature with the French brandy proposed to be imitated. 2nd. The malt spirit must be extremely pure. 3d. The dose of the essential oil must be very well proportioned ; this will be found out only by experience and practice. 4th. The whole must be artificially united into one simple and homogeneous liquor.

These cautions all regard only the taste, and besides these, in order to come up to a nice counterfeit, several other particulars must be observed and attended to, such as the colour, proof, tenacity, softness, and the like, so that in short, the operation has too much nicety in it, to be hit off by every ordinary dealer. When this fine essential oil of wine is procured, it may be mixed into a quintessence, with pure distilled alcohol, to prevent its growing distasteful, rancid, or resinous. And thus it may be long preserved in full possession of its flavour and virtues.

It may not be amiss to observe, that red or white wine lees, can always be procured from the druggists, under the denomination of red and white tartar, or red and white argol ; (it is an article much used by the dyers for dying scarlet and red colours ;) but in so doing you will not be able to distinguish the different kinds which may be offered for sale, so that a much better and safer way will be, to import them direct from France, by giving particular orders for such wine lees as you wish to make use of.

*To Purify and Improve the Flavour of Malt Spirits  
Previous to their being Converted into Brandy.*

Take three quarters of a pound of finely pulverised and sifted charcoal, and one pound of finely ground rice, put these into a gallon of malt spirits. Let them infuse during fifteen days, frequently stirring it; then strain off the liquor, and it will be found nearly of the same flavour as brandy.

N. B. The same proportion must be observed for a greater or less quantity, and the spirits so purified, may be easily convertible into brandy, rum or gin.

It may be also well to mention, that the best spirits to be converted into imitation brandy, are these: cider spirit, raisin spirit, and crab spirit; any of these are considered preferable to malt spirit, for this purpose. Also the grapes which grow in the United States, would make an excellent spirit preferable to any other, could there be a sufficient quantity procured.

*Another Method of improving English Brandy, and  
making it appear like French.*

Take thirty gallons of fine English brandy, free from any bad taste, three ounces of tincture Japanica, and nine ounces of spirit of nitre dulcis. Incorporate these together with some of the spirit, and then put it into the rest of the liquor, and stir it well about. This will make thirty gallons of brandy, and if it be a good clean spirit, it will much resemble French brandy.

*To Fine Spirits.*

Mix a small quantity of wheat flour in water as if for making paste, and pour the same into the vessel. The whole is then to be well stirred together, and in a short time the contents will become bright.

*To Condense Vapours in Distillation.*

This is best accomplished by means of a disk attached to the tube of the still, which has the figure of a lens, flattened as much as possible and made of copper. It produces a much better and more rapid effect, than the worms employed for that purpose.

*To make Brandy from Molasses.*

Spirit distilled from molasses dissolved in water, should be fermented in the same manner as the wash for common malt spirit. If fresh wine lees abounding in tartar, are well fermented with molasses, the spirit will acquire a greater vinosity and briskness, and approach the nature of foreign brandy. If the molasses spirit, brought to the common proof strength, is found not to have sufficient vinosity, it will be proper to add some sweet spirits of nitre; and if the spirit has been properly distilled by a gentle heat, it may, by this addition only, be made to pass with ordinary judges as French brandy. Great quantities of this spirit are used in adulterating foreign brandy, rum and arrack. Much of it

is also used alone, in making cherry brandy and other cordials, by infusion; in all which many prefer it to foreign brandies. Molasses like all other spirits, is entirely colourless when first extracted; but distillers give it, as nearly as possible, the colour of foreign spirits.

*How to Prepare Tincture Japanica.*

Take of the best English saffron, and dissolve one ounce; mace bruised, one ounce; infuse them in a pint of brandy till the whole tincture of the saffron is extracted, which will be in seven or eight days time; then strain it through a linen cloth, and to the strained tincture add two ounces of terra Japanica or Japan earth, powdered fine; then let it stand to infuse till the tincture is wholly impregnated therewith.

*The Method of colouring Brandy.*

All brandies, when first made, are as clear as water, but become higher coloured by long keeping; however, they may be made of any colour by the use of proper ingredients, as follows: First, to make a light straw colour, use turmeric, or a little molasses; but the best way to colour it, is with a little burnt sugar, or the syrup of elder berries: it may be made deeper or lighter according to the quantity you put in. Wood colouring is also much in use. As we have already said that brandies are as clear as water, when first distilled, it will be proper to inquire how they get their colour where no



art has been used ; and if we examine brandies when first imported into this country, we shall find that the mellowier they are, the deeper their colour is ; it is therefore obvious, that they acquire their colour by lying long in the cask ; of course the cause from whence this colour is derived is no other than the wood of the cask. I shall, therefore, give a receipt to make colouring that will imitate this tincture.

Take a sufficient quantity of oak shavings, and digest them in spirit of wine ; take also some other oak shavings, and digest them in water ; and when the liquors have acquired a strong tincture from the oak, let both be poured through a sieve into different vessels ; then place them over a gentle fire, till reduced to the consistence of molasses. Let the two extracts be now intimately mixed together, which may be done by adding a small quantity of loaf sugar, in fine powder, and rubbing the whole well together. By this means a wood colouring may be procured, and always ready for use. The best colouring next to that of wood, is burnt sugar or common molasses. The molasses gives the spirit a fine colour, yet as its colour is but weak, it will take a large quantity : this, however, is not attended with any bad consequences ; for notwithstanding the spirit is weakened by it, yet the bubble proof is improved by the molasses, and the spirit also acquires from this a sweetish taste, and a fulness in the mouth, both which properties render it agreeable to the palates of the common people. A smaller quan-

tity of burnt sugar than of molasses will be sufficient for colouring the same quantity of spirits ; the taste also is different, for instead of being made sweet as by the molasses, the spirit acquires from the burnt sugar an agreeable bitterness, and by that means recommends itself to nicer palates, which do not like a luscious spirit. Therefore, by observing the above directions, you may please any sort of customers.

*Another.*

Take coarse raw sugar, what quantity you please, boil it over a slow fire, till it becomes of a thick syrup, partaking both of a sweet and a bitter taste ; then add a little clean water to bring it to a proper consistence, otherwise when cold, it will become a hard substance. This you may keep by you for use, either in casks or bottles.

*Another Imitation Brandy.*

Take thirty-two gallons of the best cider spirit, put half a gallon of dried peaches baked brown, until they are quite dry but not burnt, beat them to a powder and put them into the cask, then take three quarters of a pound of red tartar, boil it in four gallons of water until it is reduced to two gallons, then strain it through a fine cloth, and when cold put it also into the cask and stir the whole well together ; then add to it eight gallons of French brandy, fourth proof. Allowing the cider spirit to be first proof, the two gallons of water in which the red tar-

tar is boiled, will make the French brandy into first proof, and which will make forty-two gallons of good brandy first proof; this brandy in six months time will be very fine, and will be scarcely distinguished from French brandy, first proof, and which will be as wholesome as any brandy whatever.

N. B. It will be necessary to use a little colouring.

*For twenty Gallons of Cherry Brandy.*

Cherry brandy is made different ways, sometimes by pressing out all the juice in a press, and putting as much brandy to the juice so pressed as it will bear, which will be double or treble to the juice, according to its quality, and add two or three pounds of brown sugar to every twenty gallons, with half an ounce of cloves and cinnamon beaten small. This may be used in a few days after, but will improve by longer keeping. But one of the best and most common ways of making cherry brandy, is to put your cherries (being first clean picked from the stalks) into a vessel, till it be about half full; then fill up with rectified molasses brandy, which is generally used for this compound, and when they have been infused sixteen or eighteen days, draw off your liquor by degrees, as you want it, till all the liquid is drawn off; then fill the vessel a second time nearly to the top, let it stand about a month, and then draw it off as you have occasion, till you have got the whole. You may use these cherries a third

time by just covering them with some brandy that is over proof, letting it infuse for six or seven weeks, which by its strength will extract all the juice and virtue out of the cherries ; and when you draw it off for use you must put to it as much water as the brandy was above proof, and afterwards the cherries must be pressed as long as any liquor is in them, before you cast them away.

When you make your cherry brandy of the first infusion, (the juice of which will be the best, and contain the most brandy,) mix with it till your liquor is brought to such a degree of colour as just to discern a lighted candle when held on the other side of the glass ; and if you find it does not taste well of the cherries, you may add a little more of the juice of the first infusion, and then sweeten with two or three pounds of sugar to every twenty gallons of liquor, and in proportion for a larger or smaller quantity, and this, by standing awhile, will be much improved. When you draw off your cherry juice or brandy the second time, it will be something inferior to the first, will bear less brandy in mixing or making fit for sale, and will require a little more sugar to sweeten it, together with half an ounce of cinnamon and cloves beaten, and put to twenty gallons of it. There must only be half the quantity of cinnamon and cloves in each twenty gallons of the first infusion, which the longer you keep will become the better. When you draw off your cherry brandy of the third infusion, you must not put any more brandy to it, as it will not bear it, but may

add about a pint of water to a gallon, because the third infusion is made with stronger spirits than the former. Sweeten with sugar, and use cinnamon and cloves as in the other, or a little more if needful. The liquor which is pressed from the cherries after their being thrice infused, will be thicker than the other, you may therefore add a little brandy if it will bear it, and sweeten with sugar and spice as before directed, according to your quantity ; and after it has stood a few days to settle, it will become clear and saleable. It is sometimes the practice of dealers to put into their cherry brandy some elder juice ; but it is better to put it into the cask with the cherries with each infusion of brandy.

*Cherry Brandy another way.*

Take six dozen pounds of cherries, half red and half black, mash or squeeze them with your hands to pieces, and add to them three gallons of brandy, letting them steep for twenty-four hours ; then put the mashed cherries and liquor, a little at a time, into a canvass bag, and press it as long as any juice will run. Sweeten it with loaf sugar to your taste, put it into a proper vessel, and let it stand a month ; then bottle it off, putting a lump of loaf sugar to every bottle.

*Cherry Brandy a Third Way.*

To every four quarts of brandy put four pounds of red cherries, two pounds of black, one quart of



raspberries, with a few cloves, a stick of cinnamon, and a little orange peel ; let these stand a month close stopped ; then bottle it off, putting a lump of loaf sugar into every bottle.

### *Black Cherry Brandy*

Stone eight pounds of black cherries, and put on them a gallon of brandy. Bruise the stones in a mortar, and then add them to the brandy. Cover them close, and let them stand a month or six weeks, then pour the liquor off from the sediment, and bottle it. Morello cherries managed in this manner, make a fine rich cordial.

### *Orange Brandy.*

Take two gallons of brandy, eighteen Seville oranges, two pounds and a half of loaf sugar, and one pennyweight of the essence of lemons. First pare the oranges very thin, and steep them in the brandy, close stopped in a stone bottle, for twelve days ; then boil the sugar in three quarts of water for an hour, scum it, and when cold, mix it with the brandy, and squeeze the oranges therein. Then strain it through a filtering bag, and what is short of three gallons, fill up with water.

### *Second.*

Steep some oranges or lemon rinds cut thin in a quart of brandy, then boil a quart of water, into which put three quarters of a pound of sugar, let-

ting it boil for awhile : when it is cold, mix it together, and bottle it.

*Third.*

Put the rinds of eighteen Seville oranges, in three quarts of brandy, and let them steep a fortnight in a stone bottle close stopped. Boil two quarts of spring water, with a pound and a half of the finest sugar, nearly an hour, very gently. Clarify the water and sugar with the white of an egg, then strain it through a jelly bag, and boil it near half away. When it is cold strain the brandy into the syrup.

*Lemon Brandy.*

Put five quarts of water to one gallon of brandy ; take twenty-four lemons, and two pounds of the best sugar, and three pints of milk. Pare the lemons very thin, and put the peels to steep in the brandy for twelve hours. Squeeze the lemons upon the sugar, then put the water to it, and mix all the ingredients together. Boil the milk, and pour it in boiling. Let it stand twenty-four hours and then strain it.

*Caraway Brandy.*

Steep an ounce of Caraway seeds, and six ounces of loaf sugar, in a quart of brandy ; let it stand nine days, then draw it off, and you will have a good cordial.

*Poppy Brandy.*

Take six quarts of the best and freshest poppies, cut off the black ends of them, and put them in a

glass jar which will hold two gallons, and press them in it; then pour over it a gallon of brandy, stop the glass very close, and set it in the sun for a week or more. Afterwards squeeze out the poppies with your hands, and sweeten it to your taste with loaf sugar. Put to it an ounce of alkermes perfumed, mix it well together and bottle it up.

### *Raspberry Brandy.*

Raspberry brandy is prepared much after the same manner as cherry brandy, and drawn off and made fit for sale with about the same addition of brandy as to the first, second, and third infusion of your cherry brandy, and sweetened accordingly; first making it of a bright deep colour, and omitting the cinnamon and cloves in the first, but not in the second and third infusions. The first infusion will be of a colour sufficiently deep of itself; the second infusion will be somewhat paler, and must be made of a deep colour by adding of cherry brandy about a quart to ten gallons of raspberry brandy; and the third infusion will take more cherry brandy to colour it; but in this you must be directed by your own judgment, and by the further instructions given in the receipt for making the first cherry brandy. It may be flavoured with the juice of the elder-berry.

### *Another Method.*

Take a pint of water and two quarts of brandy, and put them into a pitcher large enough to hold them and four pints of raspberries. Put in half a

pound of loaf sugar, and let it remain for a week close covered. Then take a piece of flannel, with a piece of holland over it, and let it run through by degrees. It may be racked into other bottles a week after, and then it will be perfectly fine.

### *Peach Brandy.*

This fruit, which is equal, if not superior in point of flavour, to any in the world, grows abundantly in different parts of the United States, and yields upon distillation a spirit of remarkably fine flavour, principally valued, for the purpose of forming agreeable mixtures.

The method of treating peaches and apples is similar. By some, the fruit is thrown into a large trough, where it is pounded with large pestles until completely mashed; it is then pressed out, and a hogshead of pure peach juice obtained in this way, will yield from ten to twelve gallons of the best brandy; as the pumice cannot be completely pressed, it is thrown into casks, diluted with water, and after sufficient fermentation again pressed, and immediately distilled.

### *Another Method.*

Another method, and the best, where a large quantity of peaches are to be distilled, is to grind them with iron nuts; which by mashing the stone and kernel is said to impart an agreeable bitter to the spirit; in this state it is fermented, and with the addition of a small quantity of water,

committed to the still. Others press it after the manner of pressing apples, which is preferable.

*Brandy from Fox Grapes.*

Fox grapes grow so abundantly in many parts of the United States, as, to render them an object worthy of the attention of the distiller. From their richness, there is little doubt but that a fine wine might be made from them, and a spirit little inferior to the best Cogniac Brandy. Let them be mashed, and after standing two or three days, the juice must be expressed and fermented, as with peaches. The spirit produced upon distillation will be very good of itself, and serviceable in imitating Cogniac Brandy.

*Apple Brandy or Cider Spirits.*

The great quantities of apples raised in different parts of the United States, which cannot be disposed of in any other way, render them an object to the distiller. In many places, farmers are provided with stills merely for the distillation of their own fruit, and that of a few neighbours.

In the state of New Jersey, it has become so great an object, that large works are erected for the purpose, with stills upwards of a thousand gallons.

The custom generally at those works is, for the farmer to carry his apples to the distillery, where he receives one gallon of brandy for every five bushels. The apples after being assorted, so as to work the ripest first, are then ground, either in the common way with nuts, or in a mill, constructed simi-



lar to the tanner's bark mill, after which it is pressed in a powerful screw press, as long as any juice can be obtained. The cider is then put into large cisterns, or vats, prepared for the purpose; when it undergoes a fermentation and is then fit for the still, in from six to twelve days according to the weather. Some distillers preserve the pumice after pressing, put it into casks, and cover it with water, until it undergoes a fermentation, when it is again pressed out, and the cider distilled. This however requires so much work, and so many casks, that in a busy season, it is not worth attending to. Throughout Lancaster county, and indeed in many other places, it is customary, after grinding the apples, to throw them into casks, where they undergo a fermentation, after which the whole mass is committed to the still. This is very subject to empyreuma, and the spirit obtained is of a very inferior quality; though it is said a greater quantity can be obtained in this than in any other way. From the tediousness of the operation, I am inclined to think it will be eventually found the least profitable, if an experiment were fairly and properly made. To judge of the progress of the fermentation, run a stick down in the centre of the cask; if upon drawing it out it is accompanied with a bubbling hissing noise, the fermentation is not over, but if no such noise is observable, it is then quite ready for the still. One of the great advantages stated in favour of steam stills is the distillation of pumice, by which a considerably greater quantity of spirits can be obtained.

To those who are desirous of following this plan, I would advise, as the best method of avoiding an empyreuma, the filling the still one third or one half full of water, which must be made to boil before putting in the pumice.

This is most properly called apple brandy, and the former, cider spirits ; a distinction, which it is to be regretted is not more generally made, as it would give to cider spirits its just value in the public opinion. The two kinds however are generally blended together at market, under the name of apple whiskey.

*Another.*

The following was communicated by Joseph Cooper, Esq. of Gloucester County, New Jersey, accompanied with a specimen of the liquor, made in the manner he represented. The liquor is mild, mellow, and pleasant, and greatly superior to apple spirits, made by the common process.

Put the cider, previous to distilling, into vessels free from must, or smell, and keep it till in the state which is commonly called good sound cider, but not till sour ; as that lessens the quantity and injures the quality, of the spirit. In the distillation, let it run perfectly cool from the worm, and in the first time of distilling, not longer than it will flash when cast on the still head and a lighted candle applied under it. In the second distillation, shift the vessel as soon as the spirit runs below proof, or has a disagreeable smell or taste, and put what

runs after with the low wines. By this method, the spirit (if distilled from good cider,) will take nearly, or quite, one third of its quantity to bring it to proof; for which purpose, take the last running from a cheese of good water cider, direct from the press, unfermented, and in forty-eight hours the spirit will be milder and better flavoured than in several years standing, if manufactured in the common way. When the spirit is drawn off, which may be done in five or six days, there will be a jelly at the bottom, which may be distilled again, or put into the best cider, or used for making cider royal, it being better for the purpose, than the clear spirit, as it will greatly facilitate in refining the liquor.

*To make Brandy from Beet Root.*

For the preparation of Brandy, the water used in the first boiling of the roots, is boiled again, and poured out on the residuum from the first expression of the pounded roots; this must stand for a day or two, after which it is expressed, and the remaining dry pulp serves as a good food for cattle. The juice obtained in this way is mixed with the waste parts of the syrup, and the mucilage which remains after the expression of the saccharine crystals, and all boiled together, till half of it is evaporated. The liquor is then poured into a coop exposed to a temperature of forty-five degrees Fahrenheit, and cooled to sixty-five degrees. Having added a proportionate

quantity of yeast, it is left to ferment, and in three or four days after the distillation may be undertaken.

*To make Brandy from Potatoes.*

Take one hundred pounds of potatoes well washed, dress them by steam, and let them be bruised to powder with a roller, &c. In the meantime take four pounds of ground malt, steep it in luke warm water, and then pour into the fermenting back, and pour on it twelve quarts of boiling water; this water is stirred about, and the bruised potatoes thrown in and well stirred about with wooden rakes, till every part of the potatoes is well saturated with the liquor. Immediately six or eight ounces of yeast is to be mixed with twenty eight gallons of water, of a proper warmth to make the whole mass of the temperature of from fifty-nine to sixty-six degrees; there is to be added from half a pint to a pint of good brandy.

The fermenting back must be placed in a room, to be kept by means of a stove, at a temperature of from sixty-six to seventy-two degrees. The mixture must be left to remain at rest.

The back must be large enough to suffer the mass to rise seven or eight inches without running over. If notwithstanding this precaution, it does so, a little must be taken out, and returned when it falls a little; the back is then covered again, and the fermentation is suffered to finish without touching it, which takes place generally in five or six days. This is known by its being perceived that the liquor is quite clear,

and the potatoes fallen to the bottom of the back, the fluid is decanted, and the potatoes pressed dry.

The distillation is by vapour, with a wooden or copper still, on the plan of Count Rumford. The product of the first distillation is low wines.

When the fermentation has been favourable, from every hundred pounds of potatoes, six quarts and upwards of good brandy, of twenty degrees of the ærometer, are obtained ; which put into new casks, and afterwards, browned with burnt sugar, like the French brandies is not to be distinguished from them.

One thousand pounds of potatoes at twice, gives sixty to seventy quarts of good brandy. The residue of the distillation is used as food for cattle.

Potatoes afford a good crop to the agriculturist, yield a quantity of fine pure spirit, and afterwards are used as food for hogs, cows, and sheep. It is a crop not always successful ; but where a farmer can, as is frequently the case, raise upwards of two hundred bushels from an acre of ground, there are few things will be found so profitable. Being well worthy the attention of the distiller ; three recipes are given for extracting spirit from them. They are very different, but each may succeed. It is worthy of remark, that Dr. Anderson's experiment was made in the spring of the year, when it is probable the potatoes were somewhat sprouted. His plan has been tried in the month of August, without success, but this may have been owing to other causes.



The steam of the boiler, in a distillery might be used to boil them, without any expense, other than keeping up the boiling heat for the necessary time, which will be trifling.

*Method of extracting Spirit from Potatoes, practised by Mons. Bertrand, at Metz.*

Take six hundred pounds of potatoes, and boil them in steam about three quarters of an hour ; till they will fall to pieces on being touched. The vessel in which they are boiled consists of a tub, somewhat inclined ; in the lower part of it are two holes, one for the purpose of bringing in the steam produced in another vessel, over a coal fire, and the other made to carry off, occasionally, the condensed water. After the potatoes are boiled, they are crushed and diluted with hot water till they are of a liquid consistence ; then add twenty-five pounds of ground malt, and two quarts of yeast ; the mixture is to be stirred, then covered with a cloth, and kept to the temperature of fifteen degrees Reaumer, or sixty degrees of Fahrenheit ; after fermentation and the exhalation of the carbonic acid, the matter sinks down and is fit for distillation ; by means of two stills, this mass may be rectified in one day, and it will produce about forty-four quarts of spirits, worth about a guinea and a half, while the whole cost, including coals and labour, is about twenty-three shillings and sixpence. The residuum is good food for hogs.

*Method of preparing Potatoes for Distilling.*

Wash them clean, and grind them in an apple mill, and if there be no apple mill convenient, they may be scalded and then pounded; then put two or three bushels into a hogshead and fill the hogshead nearly full of boiling water, and stir it well for half an hour; then cover it close until the potatoes are scalded quite soft; then stir them often till they are quite cold; then put into each hogshead about two quarts of good yeast, and let them ferment, which will require eight or ten days; the beer then may be drawn off, and distilled, or put pulp and all into the still as you do apples. I have known potatoes distilled in this way to yield upwards of three gallons to the bushel.

*Another Method.*

Dr. Anderson of Scotland, gives an account of a very fine spirit which he procured from potatoes; he says, "it was somewhat like very fine brandy, but milder, and had a kind of coolness on the palate peculiar to itself. Its flavour was still more peculiar, and resembled brandy impregnated with the odour of violets and raspberries."

In February, he boiled to a soft pulpy state a bushel of them, weighing seventy-two pounds, then bruised and passed them through a riddle along with spring water, keeping the skins back in the riddle and throwing them away. Cold water was then added to the pulp and mixed up till the whole

mixture was twenty gallons. It stood until sufficiently cool, when yeast was mixed with it as if it was malt wort.

In ten or twelve hours a fermentation began, which continued very briskly for ten or twelve hours, and then began sensibly to abate. It was now briskly stirred, and the fermentation was thereby renewed. The same operation was renewed every day, and the fermentation thus continued for two or three weeks. It could not then be further kept up. It was now distilled, taking care to stir it to prevent empyreuma.

*To make tincture of Salt of Tartar.*

Melt six ounces of salt of tartar in a crucible; powder it while hot, and immediately pour upon the powder a quart of spirit of wine, and digest for several days.

*To make fine Brandy Shrub.*

Take eight ounces of citric acid, one gallon of porter, three gallons of raisin wine, two quarts of orange flower water, seven gallons of good brandy, five gallons of water; this will produce sixteen gallons. First dissolve the citric acid in the water, then add to it the brandy; next mix the raisin wine, porter, and orange flower water together; and lastly mix the whole together, and in a week or ten days, it will be ready for drinking, and of a very mellow flavour.

*Second.*

Take two quarts of brandy, five quarts of orange juice, and four pounds of loaf sugar ; mix them all well together till the sugar is dissolved, then put it in a cask, and let it stand till fine. Afterwards bottle it off.

*Third.*

Take two quarts of brandy, put it into a large bottle, and put to it the juice of five lemons and the peels of two, and half a nutmeg ; then stop it up, and let it stand three days, after which add to it three pints of white wine, a pound and a half of sugar, mix it, strain it twice through a filtering bag, and then bottle it up. This is a fine cordial.

*Brandy Bitters.*

Take two ounces of gentian root, half an ounce of Virginia snake-root, half a drachm of cochineal, and one quart of brandy. Let these steep for three days ; then strain them through some cap paper, and bottle it up for use.

N. B. This is a very good bitter for the stomach and very proper in families.

*Stoughton's Brandy Bitters.*

Take half an ounce of cinnamon, half an ounce of chamomile flowers half an ounce of gentian root, half an ounce of lesser cardiman, half an ounce of caraway seed, two ounces of orange peel, four ounces of raisins, stoned, two drachms of cochineal, and two quarts of brandy. The ingredients are to be

first separately pounded and infused well together, then put into a proper vessel, and the brandy poured on them. The vessel is to be left in the sun or by the fire, and well shaken three or four times a day for a week, it should then remain still for a day or two, when it may be strained or filtered.

*Of Distilling Persimons.*

Several years ago, Mr. Isaac Bartram was requested by the American Philosophical Society, to make some experiments on the distillation of persimons. The lateness of the season prevented him from making more than one trial, which was done with half a bushel of the fruit, in the month of December, when it was much damaged by the frost and rain. The success of this experiment, however, was such as to leave no doubt but that it was a matter well worthy the attention of the farmer and distiller, and he recommends the following process :

Let a number of empty hogsheads, in proportion to the quantity of fruit, be provided : take out one of the heads of each, and in the other let a hole be bored, at four inches from the chimb, into which fix a plug, which may be occasionally taken out from the lower end, when the casks are fixed upon trussels, at a small distance from the ground. In these casks, lay over the holes, a number of small sticks, covered with straw, about two or three inches thick, to prevent the pulp from choaking them.

Four hogsheads being thus prepared, fill one of



them half full with persimons, which have been well mashed; add water until it rise within one third of the top; then cover the cask with the head that has been taken out, and let it stand about ten days; by this time the pulpy or feculent part of the fruit will be separated by the act of fermentation; then draw off the liquor, by the hole in the bottom of the hogshead, and put it in a tight cask, closely bunged up, to prevent a second fermentation, whereby the liquor would become acid, and be rendered unfit for the still.

Having thus extracted the more vinous parts from the first hogshead, let as much water be added as before, which must be well stirred, and mixed with the pulp, thereby to procure the whole strength of the fruit.

A second hogshead is then to be charged half full of fruit, well mashed as the first, and instead of pure water, fill it two thirds with the second extract of the first hogshead, leaving it to ferment as before directed. This fermentation being perfected, draw off the liquor and let it be bunged up close. The third hogshead is to be treated as the second, and in the like manner every succeeding cask. After you have in this manner, converted all your fruit into a fermented liquor, let it be kept at least one month before it is distilled, if it can be preserved without danger of becoming sour; for I have observed that vinous spirits drawn from new fermented liquors, are not equal in flavour to those which have been meliorated by age.

*To Rectify and improve the flavour of Spirits previous to their being converted into Brandy, Rum, or Gin, and for all other purposes.*

The object of rectification is to free the spirit from its own essential oil, or from any disagreeable flavour, which it may have received. In order that this may be more easily accomplished, great care should be taken in the distillation of the spirit: in particular to run it off with a slow fire, by this means but a small quantity of the oil comes over with the spirit, and that not so intimately combined, as when distilled with an intense heat. This has the effect of rendering the spirit much more mild and easier to be operated upon by any other process.

The only process at present known, is to run the spirit through good dry charcoal powder, made from maple or chestnut, the quantity required to deprive the spirit of its peculiar flavour, or essential oil, will be about one eighth, according to the quality of the charcoal, and the strength of the essential oil or flavour to be destroyed. After standing about an hour, it is to be filtered into a tub for that purpose; this will make the spirit perfectly pure and tasteless.

*To Distil Spirit from Carrots.*

Take one ton and eight stone\* of carrots, which after being exposed a few days, to dry, will weigh

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\* The stone is fourteen pounds.

about 160 stone. The whole being cut, put one third of the quantity into a copper, with twenty-four gallons of water, and after covering them up close, reduce the whole into a pulp. The other two thirds are to be treated in the same manner, and as the pulp is taken from the copper, it is carried to the press, where the juice is extracted with great facility. The liquor obtained will amount to 200 gallons, and will be of a rich sweet taste, resembling wort. It is then put into the copper with one pound of hops, and suffered to boil about five hours, when it is put into the cooler, to remain till the heat comes down to 66 degrees. From the cooler it is discharged into the vat, where six quarts of yeast are put to it, in the usual manner. Let it work forty-eight hours, or till 58 degrees, when the yeast begins to fall. Then heat twelve gallons of unfermented juice, and put it to the liquor, and the heat will be raised to 66 degrees. Work afresh for twenty-four hours longer, the liquor gradually lowering as before, from 66 deg. to 58 deg. Turn the whole into half hogsheads, to work from the bung-hole. After standing three days in the casks, fifty gallons may be drawn off, which is rectified the next day without any additional substance; twelve gallons of spirit will be obtained.

## RUM.

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Rum is a species of spirit drawn by distillation from the sugar cane.

Rum is very hot and inflammable, and is in the same use among the natives of the sugar countries, as brandy is among the French.

Rum differs from what we simply call sugar spirits, in that it contains more of the natural flavour or essential oil of the sugar cane; a great deal of raw juice, and parts of the cane itself, being often fermented in the liquor or solution of which the rum is prepared.

The unctuous or oily flavour of rum, is often supposed to proceed from the large quantity of it used in boiling the sugar, which fat indeed of course will usually give a sinking flavour to the spirit in our distillation of the sugar liquor or wash, from our refining sugar houses; but this is nothing like the flavour of the rum, which is really the effect of the natural flavour of the sugar cane. The method of making rum is thus.

When a sufficient stock of materials is got together, they add water to them, and ferment them in the common method, though the fermentation is always carried on very slowly at first; because in the beginning, at the season for making rum in the Islands. they warm yeast, to make it work; but

by degrees after this, they procure a sufficient quantity of the ferment, which rises up as a head to the liquor in the operation, and thus they are able afterwards to ferment and make their rum with a great deal of expedition and in large quantities.

When the wash is fully fermented, or it has arrived to a due degree of acidity, the distillation is then carried on in the common way and the spirit is made up proof, though some times it is reduced to a much greater strength, nearly approaching to that of alcohol or spirit of wine, and is then called double distilled rum.

It might be easy to rectify the spirit, and bring it to a much greater purity than we usually find it of, for it brings over in the distillation a very large quantity of oil; and this is often so disagreeable, that the rum must be suffered to lie by a long time to mellow before it can be used; whereas if well rectified, it would grow mellow much sooner, and would have a much less potent flavour.

The best state to keep rum in, both for exportation and other uses, is doubtless that of alcohol or rectified spirit; in this manner it will be transparent in one half the bulk it usually is in. The only use it would not serve in this state, would be the common practice of adulteration among our English distillers; for when they want to mix a large portion of spirit with the rum, their business is to have it of the proof strength, and as full of the flavouring oil as they can get it, that it may drown the flavour of the spirit they mix with it, and ex-



tend its own. If the business of rectifying rum was more nicely arranged, it would seem a practical scheme to throw out so much of the oil, as to have the rum in the fine light state of a clear spirit, and but lightly impregnated with it; in this case it would very nearly resemble arrack, as is proved by mixing a very small quantity of it with the tasteless spirit, in which case the whole bears a very strong resemblance to arrack in flavour. Rum is usually very much adulterated in England; some of the distillers there are so barefaced as to do it with malt spirit; but when it is done with molasses spirit, the tastes of both are so nearly allied, that it is not easily discovered; the best method of proving it, is by setting fire to a little of it and when it has burnt away all the inflammable part, examine the phlegm, both by the taste and smell.

The ingredients used in the West Indies, for making rum, are molasses, or treacle, drained from the sugar, scummings of the hot cane juice, from the boiling house, or sometimes the raw juice from the sugar canes, expressed for the purpose.

Rum, of which there are various sorts, is imported to this country from the West-India islands, Jamaica, Barbadoes, Antigua, Dominica, Nevis, St. Kitts, &c. but that from Jamaica is the best, and its consumption is greater than all the others. The casks in which it is brought to this country, generally give it the colour we see it to have; for among a hundred puncheons, you will rarely find

ten of the same colour, which may be owing to the newness of the casks, and from some of them having been fired in the inside more than others. Rum is more easily adulterated with rectified spirits than brandy is, and is not so readily discovered.

Jamaica and other kinds of rum generally contain so large a portion of essential oil, that they are rather improved by a mixture with an equal portion of neutralized spirit.

*To Lower and Improve a Puncheon of Rum.*

Suppose your puncheon contains one hundred gallons, and is twenty gallons over proof, get twenty gallons of good old pale porter, two pounds of sugar-candy, a quarter of a pound of green tea, (or some green tea leaves after being used will do,) then boil half a gallon of water, and when cold, mix with it your sugar and tea, having your sugar previously powdered; then take a whisk, and whisk it well together in a can; after which, put it and the porter into your rum, stir it well about with your staff, and leave the bung slack for a day or two; then bung it up, and in three or four days it will become bright without finings. This will make your liquor mellow and pleasant to the taste, besides which you will gain five gallons of rum by the addition of the porter, which will make amends for the price of all the ingredients. By your trying it with the hydrometer, you will find it to be five gallons over-proof, you may therefore let it down to what strength you please with water, observing, that the

water you use in reducing foreign spirits should always be that which has been boiled and is gone cold, as the rawness is thereby taken away, and the water made soft. You may manage and lower this rum, to serve those of your customers who may require rum of a low price, by mixing it with sugar or molasses spirit, spirit of wine, and water, of which I shall give directions hereafter. Likewise, if your rum wants a bead, which will be the natural consequence of lowering it, take three pounds of clarified honey, and whisk it up in a can with some of your rum ; after which pour it into your punchon, and stir it well about. This will both improve the flavour of your liquor, and give it a bead : should your rum require a deeper colour, you may regulate it according to your wishes with burnt sugar, putting a little into your cask at a time, stirring it about, and trying the colour in a glass, that you may see when it is deep enough. The grounds or sediments of porter or beer are excellent for improving the flavour of rum. The casks of porter, sent to the West-Indies, are often returned with rum, which is the best flavoured, for its age, of any that comes to this country.

*To make Jamaica Rum*

This is obtained from the refuse of the raw sugar manufactories, by taking equal quantities of the skimmings of the sugar pans, of lees, or returns as they are commonly called, and of water ; and to one hundred gallons of this wash, are added ten

gallons of mollasses, this affords from ten to seventeen gallons of proof rum, and twice as much low wines ; it is sometimes rectified to a strength approaching to spirit of wine, and is then called double distilled rum.

*To Imitate Jamaica Rum.*

To imitate Jamaica rum, it is necessary to procure some of the tops, or other parts of the sugar canes, and to put them in a still, in the proportion of a pound weight to two gallons of a pure flavourless spirit, and one gallon of pure water, the distillation may be carried on by a brisk heat, provided there is a quantity of common salt, (in the proportion of an ounce to each gallon of liquid in the still,) to prevent the mucilaginous matter from arising with the spirit. The product when rectified and coloured by burnt sugar, will possess every character of excellent rum.

*To obtain Rum from Molasses.*

Mix two or three gallons of water with one gallon of molasses, and to every two hundred gallons of this mixture add a gallon of yeast ; once or twice a day the head as it rises is stirred in, and in three or four days, two gallons more of water is added to each gallon of molasses originally used, and the same quantity of yeast as at first ; four, five, or six days after this, a portion of yeast is added as before, and about an ounce of jalap root powdered, (or in winter one ounce and a half,) on which the fermenta-

tion proceeds with great violence, and in three or four days, the wash is fit for the still : one hundred gallons of this wash is computed to yield twenty-two gallons of spirit, from one to ten over proof.

*Another method of lowering and improving a Puncheon of Fourth Proof Jamaica Rum, so as to make it into four Puncheons of First Proof.*

To a Puncheon of Jamaica rum, fourth proof, procure twenty gallons of good, old, pale, London porter, as before mentioned ; and instead of two pounds of sugar candy, procure ten pounds of good, clean, rich, yellow, New Orleans sugar, and three quarters of a pound of green young hyson tea, then boil four gallons of water, and pour it boiling hot on the tea, and add your sugar to it, (being previously made into a fine powder,) stir the mixture well together, and cover it up, and let it stand for twenty-four hours, or until the strength is completely out of the tea ; then take a whisk and whisk it well together, in a can or other vessel ; after which put it into your rum, then add also the porter, and stir all well together ; then take two tolerably large size Pine apples, cut them in thin slices, and put them in also. After this you may put as much molasses proof spirit, as will make the whole into four puncheons.

In order to raise a sufficient beard on it, take three pounds of clarified honey, put it into a gallon measure, and fill up the measure with sugar-house molasses ; mix this with a quantity of the rum, and



whisk it well together ; after which add to it the rum, and stir the whole well together. If the colour should not be high enough add a sufficient quantity of colouring made from burnt sugar, so as to give it a tolerably high colour. The whole will now have to be put into four puncheons, which leave out the bungs, and stir the liquor occasionally every day for a month, when it will be fit for use, and will be excellent first proof rum, but it will improve very materially with age.

N. B. Malt spirits should never be made use of in lowering rum, and should there be a difficulty in procuring molasses spirit, an excellent receipt is given for preparing it. See Rum obtained from molasses.

*To make New-England Rum into St. Croix.*

To a puncheon of New-England rum fifty per cent above proof, (or if the proof is no consequence, ten per cent above proof,) take ten gallons of water and boil it; while boiling pour it boiling hot upon three pounds of bohea tea, or what is commonly called black tea; then add six pounds of clean, rich, yellow, New-Orleans sugar, and stir the whole well together, cover it up and let it stand for twenty-four hours, then whisk it well together, and add it to the rum, stir it occasionally for three or four days when it will be fit for use ; and in order to give it a beard add three pounds of clarified honey, and three pounds of sugar-house molasses well stirred up together and put in, stirring the whole

well together. This will make St. Croix rum first proof.

*To make Lemon Syrup.*

Put a pint of fresh lemon juice, to a pound and three quarters of lump sugar ; dissolve it by a gentle heat, scum it till the surface is quite clear, add an ounce of thin cut lemon peel, let them simmer (very gently) together for a few minutes, and run it through a flannel. When cold, bottle and cork it closely, and keep it in a cool place.

*Syrup of Lemon or Orange Peel.*

Of fresh outer rinds of Seville orange or lemon peel, three ounces apothecaries' weight ; of boiling water a pint and a half ; infuse them for a night in a close vessel, then strain the liquor, let it stand to settle, and having poured it off clear from the sediment, dissolve in it two pounds of double refined loaf sugar, and make it into a syrup with a gentle heat.

In making this syrup, if the sugar be dissolved in the infusion with as gentle a heat as possible to prevent the exhalation of the volatile parts of the peel, this syrup will possess a great share of the fine flavour of the orange, or lemon peel.

*The Justices Orange Syrup for Punch.*

Squeeze the oranges, and strain the juice from the pulp into a large pot ; boil it up with a pound and a half of fine sugar to each pint of juice ; skim it well, let it stand till cold, and then bottle it, and

cork it well. This makes a fine, soft, mellow flavoured punch.

*Clarified Syrup.*

Break into bits two pounds (avoirdupois) of double refined lump sugar, and put it into a clean stew pan, (that is well tinned,) with a pint of cold spring water; when the sugar is dissolved, set it over a moderate fire; beat about half the white of an egg, put it to the sugar before it gets warm, and stir it well together. Watch it and when it boils take off the scum; keep it boiling till no scum arises, and it is perfectly clear, then run it through a clean napkin: put it into a close stopped bottle; it will keep for months, and is an elegant article for sweetening.

*Observation.*—The proportion of sugar ordered in the above syrup, is a quarter of a pound more, than that directed in the Pharmacopœia of the London College of Physicians. The quantity of sugar must be as much as the liquor is capable of keeping dissolved when cold, or it will ferment, and quickly spoil; if kept in a temperate degree of heat, the above proportion of sugar may be considered the basis of all syrups.

*To Candy Orange Peel.*

Soak the peels in cold water, which change frequently till they lose their bitterness; then put into syrup, till they become soft and transparent. Then they are to be taken out and drained.

*To Candy Lemon Peel.*

This is made by boiling lemon peel with sugar and then exposing to the air until the sugar crystallizes.

*Lemonade.*

Pound a quarter of an ounce (avoirdupois) of citric, i. e. crystalized lemon acid, with a few drops of quintessence of lemon peel, and mix it by degrees with a pint of clarified syrup.

*Quintessence of Lemon Peel.*

Best oil of lemon one drachm, strong rectified spirit, two ounces, introduced by degrees, till the spirit kills and completely mixes with the oil. This elegant preparation possesses all the delightful fragrance and flavour of the freshest lemon peel.

*Observation.*—A few drops on the sugar you make punch with, will instantly impregnate it with as much flavour as the troublesome and tedious method of grating the rind, or rubbing the sugar on it. It will be found a superlative substitute for fresh lemon peel, for every purpose that it is used for: such as negus, lemonade, punch, &c.

*Essence or Tincture of Ginger.*

Put three ounces of fresh grated ginger, and an ounce of thin cut lemon peel, into a quart of Brandy or proof spirit, (apothecaries measure,) let it stand for ten days, shaking it up each day.

*Essence or Tincture of Nutmeg.*

Take essential oil of nutmeg, apothecaries measure, one drachm, strong spirit of wine two ounces, mixed by degrees. This is excellent to flavour mull-ed wine or what is called "A Bishop."

*Essence or Tincture of Lemon Peel.*

A very easy and economical way of obtaining and preserving the flavour of lemon peel, is, to fill a wide mouthed quart bottle half full of brandy, rum, or proof spirit; and when you use a lemon, pare the rind off very thin, and put it into the brandy, &c. in a fortnight it will impregnate the spirit with the flavour, very strongly.

*Lemon Syrup.*

Take one gallon of juice, and put it in a brass pan over a slow fire, with a pound and a half of good raw sugar, stirring it frequently till it is become a proper syrup; then take it off the fire, and when cold and settled, pour it into clean bottles, cork them, and keep it for use.

N. B. You may make any quantity you please, either by adding or reducing the ingredients. See *Second Cowslip Wine*.

*Elder Syrup.*

First, take one gallon of juice, and put it in a brass pan over a clear but slow fire, adding the whites of two eggs, well beaten to a froth. When



it begins to boil, skim it as long as any froth appears upon the top of it; then put to every pint of the clarified juice one pound of raw sugar, and let them boil very slowly together, till it becomes a proper syrup, which you will know by dropping a little upon your nail, when if it is sufficiently boiled it will stand without spreading. After which let it stand till cold, and then put it into glass bottles, covered only with paper pricked full of holes; and keep it for use. This is a good colouring either for rum or brandy, or making of elderberry wine in winter. *See First Elder Wine.*

N. B. You may make any quantity you please either by adding or reducing the ingredients.

#### *Capillaire.*

For three gallons, take fourteen pounds of loaf sugar and seven pounds of moist, with eight fresh eggs well beaten; then mix your eggs with the sugar. Boil the same in four gallons of water, and skim it as long as any scum appears, then strain it through a coarse bag, and add three pennyweights of the essence of lemons. This is an excellent thing for sweetening spirits, particularly in making grog, punch, or negus. Many of the first inn-keepers and publicans keep this by them for those purposes.

#### *To make Rum Shrub.*

To one gallon of soft Jamaica spirits, one pint fresh lime juice, four pounds refined sugar; being

consolidated together, then add one dozen sweet oranges and the same of lemons, cut up. In ten days it will be ready for use.

*Rum Shrub a Second Way.*

Shrub is often made in the West Indies as follows : take one gallon of rum, six pounds of sugar, and a quart of lime juice ; dissolve your sugar in the lime juice, and then mix it all well with the rum ; after which set it in a bottle or cask to settle, and it will become mellow. This will make excellent punch.

*Rum Shrub a Third Way.*

For two gallons, take one gallon of rum, a small quantity of the essence of lime, twenty-four ounces of brown sugar, one pint of lime juice, and one gallon of water. Boil your water and sugar together awhile, then scum it, and when cold add to it a little isinglass finings and the white of an egg, with a little of the essence of lemons ; mix it well with your rum, and put it to settle. You may make what quantity you please by proportioning the ingredients according to this receipt. This shrub is suitable for publicans.

*Rum Shrub a Fourth Way.*

Take seven quarts of rum, three pints of orange juice, three pints of orange or currant wine, two pounds of loaf sugar. Fill up with water.

N. B. Some people use half orange juice and

half lemon, but if the orange juice is good it gives the shrub a better flavour than when mixed ; a small quantity of essence of lemons will also greatly improve the flavour of shrub. The sugar should be boiled in clean spring water, the scum taken off, and when cold mix it together.

*Another Rum Shrub, made with Currants.*

Take white currants, when quite ripe, pick them from the stalks, and bruise them ; strain out the juice through a cloth, and to two quarts of the juice put two pounds of loaf sugar ; when it is dissolved, add to it a gallon of rum, then strain it through a flannel bag that will keep in the jelly, and it will run off clear ; then bottle it for use.

*Rum Bitters.*

Take two ounces of gentian root, one ounce of Seville orange peel dried, half an ounce of lesser cardaman seeds free from the husk, and one quart of spirits. Put these to steep in the spirits for fourteen days, then strain it through some cap paper.

*To Make Excellent Punch.*

Take one teaspoonfull of acid salt of lemons, a quarter of a pound of fine sugar, a quart of water nearly boiling, half a pint of rum, and a quarter of a pint of brandy ; a little lemon peel may be added, or in place thereof, a few drops of essence of lemon.

*To take off the Blackness from Rum or Brandy, occasioned by the touch of Iron.*

Should your rum become black by the touch of iron, for one puncheon take a quart or three pints of skim-milk (as you find it necessary) and the same quantity of black earth; mix these together in a can, with a gallon or two of rum, then put it into your puncheon, and stir it well about with your staff; then put your bung in, and in ten or twelve days it will become bright. Your puncheon should be on a stillage, that you may rack it off when fine.

N. B. Brandy may be managed in the same manner.

*Second.*

Take one gallon of sweet milk fresh from the cow, stopping up the cask and shaking it well; let it stand twenty-four hours, then draw it off and it will be perfectly limpid.

## GENEVA.

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Geneva is formed by the distillation of whiskey, or any other spirit, with a portion of Juniper berries, or oil of Juniper.

This spirit derives its name from Genevre, the French name of the Juniper berry ; It was formerly a custom to mix a variety of articles with malt spirits, in order to take of the disagreeable flavour. Among other things used for this purpose, some tried the Juniper berries, and finding they gave not only an agreeable flavour, but very valuable virtues to the spirit, the custom became general, and the liquor sold under this name. The method of adding the berries was, to the malt in grinding, a proper proportion was allowed and the whole was reduced to meal together, and worked in the common way. The spirit thus obtained, was flavoured with the berries, and exceeded all that could be made by any other method.

It was however soon discovered, that there was a great similarity in the flavour of oil of Juniper and that of turpentine, though a very material difference in the price ; the Juniper was accordingly, entirely omitted, and spirits of turpentine substituted ; such is the common practice at present in England.



I have never heard of the method of grinding the berries being used in this country, although, there is no doubt, that by mixing the oil or berry, with the wash previous to, or during fermentation, a more complete union will take place.

The use of spirits of turpentine however, has unfortunately become too common, and is one great cause of the badness of American gin, and consequent prejudice against it. But as this article is frequently mixed with, and sold for, Juniper oil, the distiller is deceived, and at a loss to account for the bad quality of his gin.

The improvements in gin making, have been very considerable within a few years past, and some of our distillers seem to be actuated by a laudable determination to equal the Holland gin, justly esteemed superior to that of any other part of the world. This is certainly a great desideratum, when we consider the very great difference in price, between Holland gin, and that of America.

Whence this great difference? and why cannot we make gin equal to Holland? The superiority of their gin is generally attributed to some secret, known only to themselves, and which has never got without the walls of their distilleries.

That we can make gin equal to theirs, without the aid of this wonderful secret, I believe, and for these reasons; it is a well known fact, that they frequently have taken grain from this country to make gin; it is also known, that they use large quantities of buckwheat, which is considered inferior

to rye or corn ; it is well known that there is a great difference in gin from the different distilleries in Holland, and it is also well known that distillers from Holland, who come to this country, cannot make better gin than we do ourselves. Many who have experienced the fact, state, that the gin in Holland, is not better than that made in some distilleries in this country : And it has also been ascertained that a voyage to sea has so improved American gin that it passed for Holland. What then but age and the sea voyage, creates the difference ? Or have they a different method of incorporating the Juniper with the spirit ? And are they not more attentive to cleanliness\* in their distilleries than we ? With respect to the great secret, if this is a fact, would not some of the distillers who emigrate to this country bring it with them ? Or, would not some Americans ere this have obtained it, either by purchase or by bringing over some person acquainted with it ? Whence the difference in quality, of Holland gin, from different distilleries, if they all have the same secret ? Let those who argue in favour of the secret, and who say we cannot equal Holland gin, take into consideration, that twenty-five or thirty years ago scarcely any attempts were made in this country, to manufacture gin ; that the Hollanders have pursued it as a regular business for four hundred years, and that in the single town of Schiedam, in the year 1775, there were one hundred and twenty distilleries ; in 1792, there were 220 ;

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\*The cleanliness of the Hollanders is proverbial.

and in 1798, there were 260 ; and in the whole province of Holland, 400 ; each of which made annually 4992 ankers, or pipes of gin.

These distilleries were probably the sole dependence of their owners for a living ; and to them their whole attention was devoted. But in this country, even to this time, how few distillers are there who depend solely on their distilleries ? or who pay any attention to the quality of their spirit ?

Let it also be remembered, that geneva is a product of art, and does not depend either upon soil or climate ; and that if the same materials be employed, and the same process be observed, the result must be the same, whether in Russia, Holland, or America.

Their materials we know to be the same, and their process corresponds nearly with ours. But there are many little circumstances which affect the quality of geneva, to which we pay no attention.

Let us not, then, because some few men have failed to imitate Holland geneva, by pursuing what they supposed to be the Holland plan, give it up as impracticable ; but rather, reflecting, that as it requires time to bring any art to perfection, we must ultimately succeed by pursuing it steadily with that determination.

I have indulged myself in these observations from a belief to their correctness, and in the hope that it may stimulate our distillers to pay more attention to a matter of such great importance ; but to return to the subject more immediately requiring our atten-

tion, there is certainly an advantage in rectifying whiskey previous to its distillation with juniper; this however is too tedious and complicated an operation for the grain distiller. I have generally succeeded very well in making geneva, and the plan I adopted was to throw into each charge of singlings a sufficient quantity of Juniper berries, without any other addition whatever, being satisfied that most of the other ingredients generally used are rather injurious than beneficial; the quantity of berries can only be ascertained by experiment, as there is considerable difference in the quality; geneally however, twenty to thirty pounds to 110 gallons of spirits will be right. I have read a paper on the subject of the geneva distillery in Holland, by a Mr. Crookens. Some of his assertions appear to be erroneous, and it is difficult to reconcile others. He notices, however, the difference in the quality of geneva made at different distilleries, and lays much stress on the kind of water which is used, and the manner of making and using yeast, which he says is kept a secret. He says they prefer rye grown upon a dry sandy soil, and mostly use the Prussian rye, which from the circumstance of being kiln dried, is called dried rye, and at least one fourth malt. This accounts for the difference between Holland and American geneva in some measure, for it has always been observed that there was a rawness in American geneva, not perceptible in Holland geneva, supposed to be from the use of corn; and to divest it of this flavour, has been always considered necessary to imitate Holland geneva.



From experiments however which have been made with rectified whiskey, it is evident that something more is necessary than merely to divest our spirit of this raw flavour. It is also requisite to give some other flavour with the Juniper. This must probably be done during the fermentation, and by using kiln dried grain. Care, attention, and cleanliness, age and a sea voyage, all assist.

It has been asserted by Dutch distillers who come to this country, that the Holland distillers use dry yeast, which is sent down the Rhine from the German breweries.

The scarcity and high price of berries has obliged the distiller to resort to the use of the oil of Juniper, which has been reprobated for the reasons above stated : unfortunately the distiller has no method of detecting the imposition, and is equally deceived with the consumer ; when however genuine oil can be obtained, it will be found equal to the berry.

Shaw, in his essay on distillation, says “ the best method of introducing the oil, so as to avoid all inconvenience, is to reduce it first, to an oleosaccharum, by grinding it in a mortar with a due quantity of fine sugar in powder. The oil thus added, with its particles disunited and in form of powder, will readily mix with the liquor (or wash) and immediately ferment with it.

The method which I have adopted in using the oil is this : Take two gills of Juniper oil, pour it on four or five handfuls of rye meal, and stir it until it has the appearance of brown sugar ; then pour on



boiling water enough to make it of the consistence of paste, add rye meal to make it into stiff dry balls, each containing sufficient for one charge of singlings, the whole being equal to eighty pounds of berries, provided the oil is good ; a few trials will show the proper quantity.

When the oil of Juniper can be obtained perfectly pure and unadulterated, it may be mixed with alcohol. After standing a few days until the oil is completely dissolved and united with alcohol, it may be mixed with proof spirit. I have known this to be done, and the gin thus made, not to turn blue upon being mixed with water ; it however cannot be relied on, owing to the impurity of the oil, except obtained direct from the importer.

This information, well known to Chemists, is sold by many pretended Holland distillers, as a great secret.

This article, however, at best is but an imitation of a foreign spirit. We are indebted to a foreign country for the ingredients which imparts the peculiar flavour of that liquor, and even in these we are liable to be greatly deceived. It should therefore become the particular aim of the American distiller to make a spirit purely American, entirely the produce of our own country ; and if the pure unadulterated grain spirit cannot be rendered sufficiently palatable to those tastes, that are vitiated by the use of French brandy or Jamaica rum, let us search our own woods for an article to give it taste sufficiently pleasant for these depraved appetites.

In this country there is an abundance of fruits, herbs, plants, seeds, and barks ; and certainly the produce of our own country is the most proper for its own inhabitants, and which will be found the most congenial and beneficial to their health.

There is also reason to believe, that no country produces a more extensive, or a more suitable variety, for the distiller to make choice of, and try his skill upon ; and by a steady perseverance, leaves no doubt of success. This holds out every encouragement to the American distiller, to persevere in making a liquor, which is purely American, and independant of all other nations. And as the French brandy, the Jamaica rum, the Holland gin, the Irish whiskey, the English beer and porter, and the Wines of all nations, find their way into this country, so may the pure American wines and spirits, when brought to perfection, find their way to all other countries.

In order to give every information necessary, both to the distiller, the grocer, and the dealer, it may not be amiss to observe, that, of the numerous plans adopted by distillers to increase their produce, there is none so improper in itself, so deceptive to the purchaser or eventually injurious to the distiller himself, in any situation, as that of putting a false head upon geneva and whiskey.

To correct this evil, to place the ignorant purchaser upon a footing with a more skilful one, and to do justice to the distiller who sends his spirit to market of a proper strength, the corporation of the

city of Baltimore, in the year 1807, passed an ordinance subjecting to inspection, all geneva and whiskey which might be offered for sale in that city.

The act of the legislature of New-York, requires that all spirituous liquors offered for sale, in the city of New-York, be subject to inspection. Southworth's hydrometer is the standard, by which first proof is fixed at 15 degrees below proof on Dicas's hydrometer.

Contracts for gin or whiskey are understood to be for hydrometer proof, and the inspector marks accurately the degrees under or over proof, for which an allowance is always made. The act of the legislature of Pennsylvania requires that all spirituous liquors shall, prior to exportation from the port of Philadelphia, be gauged, inspected, &c. Liquors 10 degrees below proof, on Dicas's hydrometer, to be considered as first proof, 5 degrees as 2d proof, and 5 degrees above as 4th proof. Dicas's hydrometer is the standard. In all cases where the spirit is not proof, the inspector's fee shall be paid by the person offering the same for sale; in other instances it must be paid by the purchaser.

The mode of inspection in Baltimore, is not generally known; a few words are therefore necessary to put distillers, grocers, and dealers on their guard on this subject.

When gin or whiskey is below proof, every degree is carefully marked, and a deduction of one cent for each degree, will be made by the purchaser, but if it be a few degrees above proof, no notice is

taken of the number of degrees, except they be sufficient to entitle it to be called 2d proof, which may be nine, or even twelve degrees above proof; and 4th proof spirit, which is twenty-five degrees and more above proof, will be marked about fifteen degrees above proof, at the will of the inspector.

*Method of Lowering Geneva down to Proof.*

This spirit derives its name from being manufactured in Holland. The best is made in Schiedam, and brought from thence to Rotterdam, from whence it is shipped to different places. Much of the inferior sort is smuggled into this country, (England) but that which has paid the duty, the dealers may purchase on the quays, as they do brandy. This spirit is generally one toten over proof when landed, and is one of the most difficult to manage. First, take care, when you lower or mix British spirits with it, to get good, clean, bright spirits, for the purpose; and in lowering with water, it must first be boiled, and when cold, you must put a piece of nice, white, roach lime into it, and stir it up. When settled, pour off the water from the lime, mix it with your Hollands, and stir it well about with a clean staff for five or six minutes, that it may be well incorporated together. There are many who lower it a different way; and let their geneva remain in the store, cask, or piece in its original state, and so lower it as they send it out, according to the different prices; but it is preferable for them to manage their water as before-mentioned, and shake

it well together, before they send it out, as if it is not well shaken together, it is apt to get stringy and foul, after which it is not easily to be remedied. Should your gin be ropy, you must have a linen or a flannel bag [*See filtering bag*] and run your geneva through it ; and if it all runs through the first time, and is not improved, you must repeat it till it shall come through bright: or if your geneva be tainted, take some alum, and boil it in soft water till it is all dissolved ; then add a little salt of tartar, and when nearly cold, put it into your geneva ; after which, take a clean staff, and stir it well about for five minutes. One pound of alum, and four ounces of salt of tartar, will be sufficient for a piece that is much tainted. The whites and shells of ten or twelve fresh eggs, broken small and well beaten together, is an excellent thing for fining geneva ; but if your geneva has become black through the touch of iron, take a quart of skim-milk, with two ounces of isinglass, and put it into your liquor. This will draw the blackness down, after which, use the above ingredients if necessary. To improve the flavour of geneva put a small quantity of rose water, or elder-flower wine, into a piece, and give it a good stirring.

*To Prepare Geneva as in Holland,*

The grist is composed of ten quarters of malt, ground considerably finer than malt distillers' barley grist, and three quarters of rye-meal ; or, more frequently, of ten quarters of rye and three quarters



of malt meal. The ten quarters are first mashed, with the least quantity of cold water it is possible to blend it with, and when uniformly incorporated, as much boiling water is added as forms it into a thin batter; it is then put into one, two, or more casks, or gyle tuns, with a much less quantity of yeast than is usually employed by our distillers. Generally on the third day, the distillers add the malt or rye meal, prepared in a similar manner, but not before it comes to the temperature of the fermenting wash; at the same time adding as much yeast as at first.

The principal secret is the management of the mashing part of the business, in first thoroughly mixing the malt with the cold water, and in subsequently adding the due proportion of boiling water, that it may still remain sufficiently diluted after the addition of the fine meal; also in well rousing all together in the back, that the wash may be diluted enough for distilling, without its endangering its burning to the bottom.

#### *Rectification into Holland Gin.*

To every twenty gallons of spirit of the second extraction, about the strength of proof, take of juniper berries. three pounds, oil of juniper two ounces, and distil with a slow fire until the feints begin to rise, then change the receiving can; this produces the best Rotterdam geneva.

An inferior kind is made with a still less proportion of berries, sweet fennel seed, and Strasburgh

turpentine, without a drop of oil of juniper ; and a better sort, but inferior to the Rotterdam, is made at Weesoppe. The distillers' wash at Schiedam and Rotterdam, is lighter than at Weesoppe. Strassburgh turpentine is of a yellowish brown colour, a very fragrant agreeable smell, yet the least acrid of the turpentines. The juniper berries are so cheap in Holland that they must have other reasons than mere cheapness for being so much more sparing of their consumption than our distillers.

*English Geneva.*

This compound is made of rectified malt spirit, with juniper berries, or the oil, and other ingredients, and has many different flavours. Its consumption is very great in some parts of England. I shall therefore subjoin a receipt for making it, the knowledge of which will be a great advantage to tavern-keepers and other dealers in spirits, and enable them to be masters of their business. The spirit that you must procure for making gin, or other compounds, is the clean rectified spirit, of the strength of one in five under proof, which you may purchase of the distillers.

*Another.*

The best English geneva is made as follows ; take of juniper berries three pounds, proof spirit ten gallons, water four gallons ; draw off by a gentle fire, till the feints begin to rise, and make up the goods to the required strength with clear water.

*A Receipt to make twenty gallons of Geneva.*

Take seventeen gallons of spirits, one pennyweight and a half of the oil of vitriol, one pennyweight and a half of the oil of almonds, one pennyweight of the oil of turpentine, one pennyweight and a half of the oil of juniper berries, three gills of spirit of wine, one pint of lime-water, five pounds of sugar ; fill up with water. You may make any quantity you please, by reducing the ingredients accordingly.

N. B. To prepare the ingredients, you must first properly kill the oils, which must be done by beating them in a mortar with a few lumps of loaf sugar and a little salt of tartar, till they are well mixed together ; then add by degrees, half a gill of the spirit of wine, and beat and rub the same well together, till it is so incorporated that there is no appearance of oil left ; then put it in a can with the rest of the spirit of wine and the lime-water, and beat the whole well together with a stick. Put the sugar into about two gallons of water, and take the scum clean off ; observing that the water must be the softest you can get, and must be first boiled, and stand till nearly cold ; then mix the whole together in your cask.

To fine your liquor proceed as follows : Take two ounces of alum, and a little water ; boil it for half an hour, then put to it by degrees, one ounce of salt of tartar, and when nearly cold pour it into your cask, and stir it well about with your staff for

five or six minutes. It must not be stoped close till fine.

N. B. You may either increase or diminish the oils of turpentine and juniper berries, according to the flavour most liked by your customers.

*Geneva Bitters.*

Take half an ounce of the yolks of fresh eggs, carefully separated from the white, half an ounce of gentian root, one drachm and a half of Seville orange peel, and one pint of good geneva; pour the geneva upon the above ingredients, and let them steep in it for two hours, then strain it through some cap paper, and bottle it for use.

*Whiskey Cordial.*

Take of cinnamon, ginger, and coriander seeds, each three ounces; mace, cloves and cubebs, one and a half ounce. Add eleven gallons of proof spirit, and two gallons of water, and distil; now tie up five ounces of English saffron, raisins stoned, four and a half pounds, dates three pounds, liquorice root two pounds; let these stand twelve hours in two gallons of water, then strain and add it to the above, and dulcify the whole with fine sugar.

*To Make lime Water.*

Take four pounds of unslacked lime, put it into a pail, and put a sufficient quantity of water to slake it. When it is dissolved, add two gallons of water and stir it well. After it has settled, and is gone cold, it is fit for use.

## LIQUEURS.

### *To make Ratifia d'Angelique.*

Take of angelica seeds, one drachm, stalks of angelica, bitter almonds, blanched, each four ounces, proof spirit, six quarts, white sugar two pounds : digest, strain and filter.

### *Annisette de Bordeaux.*

Take of sugar nine ounces, oil of anniseed six drops, rub them together, and add by degrees, spirit of wine, two pints, water four pints ; filter.

### *Real Creme des Barbades.*

Take two dozen middling size lemons, six large Citrons, loaf sugar twenty eight pounds, fresh balm leaves, half a pound, spirit of wine two and a half gallons, water three and a half gallons, this will produce about seven gallons full measure. Cut the lemons and citrons in thin slices, and put them into a cask ; pour upon them the spirit of wine, bung down close, and let it stand ten days or a fortnight ; then break the sugar, and boil for half an hour in the three and a half gallons of water, skimming frequently ; then chop the balm leaves, put into a large pan, and pour upon them the boiling liquor, and let it stand till quite cold : then strain through a lawn sieve, and put it to the spirits, &c. in



the cask ; bung down close, and in a fortnight draw it off, strain it through a jelly bag, and let it remain to fine ; then bottle it.

*Eau de Barbades.*

Take of fresh orange peel one ounce, fresh lemon peel one ounce, cloves half a drachm, coriander one drachm, proof spirits four pints ; distil in a bath heat, and add white sugar in powder.

*Ratafia de Cafe.*

Take of roasted coffee ground, one pound, proof spirit one gallon, sugar twenty ounces, digest for a week.

*Ratafia de Cassia.*

Take of ripe black currants six pounds, cloves half a drachm, cinnamon one drachm, proof spirit nine quarts, sugar three and a half pounds, digest for a fortnight.

*Ratafia des Cerises.*

Take of Morrella cherries, with their kernels bruised, eight pounds, proof spirit eight pints ; digest for a month, strain, with expression, and then add one and a half pounds of sugar.

*Ratafia de Chocolat.*

Take of carracca cocoa nuts roasted, one pound, West India cocoa nuts half a pound, proof spirit

one gallon ; digest for a fortnight, strain, and then add sugar one and a half pounds, tincture of vanilla thirty drops.

*Eau Devine.*

Take of spirit of wine one gallon, essence of lemons and essence of Burgamotte, each one drachm, distil in a bath heat, add sugar four pounds dissolved in two gallons of pure water, and lastly, five ounces of orange flower water.

*Elephant's Milk.*

Take of benjamin two ounces, spirit of wine one pint, boiling water two and a half pints, when cold, strain, and add sugar one and a half pounds.

*Ratafia de Grenoble.*

Take of small, wild, black cherries, with their kernels bruised, twelve pounds, proof spirit six gallons, digest for a month, strain, and then add twelve pounds of sugar ; a little citron peel may also be added at pleasure.

*Marasquin de Groseilles.*

Take of gooseberries quite ripe one hundred and two pounds, black cherry leaves twelve pounds, bruise and ferment ; distil, and rectify the spirit. To each pint of this spirit, add as much distilled water, and sugar one pound.

*Huile de Venus.*

Take of flowers of the wild carrot, picked, six ounces, spirit of wine ten pints, distil in a sand heat. To the spirit add as much syrup of capillaire ; it may be coloured with cochineal.

*Liquedilla.*

Take the thin peel of six oranges and six lemons, steep them in a gallon of brandy or rum, close stoppered for two or three days, then take six quarts of water, and three pounds of loaf sugar clarified with six eggs. Let it boil a quarter of an hour, then strain it through a fine sieve, and let it stand till cold ; strain the brandy from the peels, and add the juice of five oranges and seven lemons to each gallon. Keep it close stoppered up six weeks, then bottle it.

*French Marasquin, a new Liquor.*

Advantage has not hitherto been taken of the fruit of the St. Lician tree, (prunes, *mahaleb*, Lin.) This small black fruit, is of a very disagreeable taste, but it may produce an excellent liquor. M. Cadet de Vaux, recognizing in this little cherry an aromatic savour, thought it would serve to make a kind of kirchwasser. In effect, it ferments and furnishes by distillation a prussic alcohol ; but by putting it first to infuse in some brandy, for some time, there is obtained by distillation in a bath heat, a spirit of a very agreeable aromatic, and which pro-

perly sweetened, forms a liquor comparable to the best marasquin of Italy, it is necessary to bruise the fruit and the nuts, before infusing them in brandy ; the spirit must also be brought back to twenty degrees, before sweetening it. Then add nearly twelve ounces of sugar to every quart of liquor. *Journal de Pharmacie*, 1821.

*Ratafia de Brou de Noix.*

Take of young walnuts whose shells are not yet hardened, in number sixty, brandy four pints, sugar twelve ounces, mace, cinnamon, and cloves, fifteen grains ; digest for two or three months, press out the liquor, filter, and keep it for two or three years.

*Ratafia de Noyeau.*

Take of peach or apricot kernels, with their shells bruised, in number one hundred and twenty, proof spirit four pints, sugar ten ounces, some reduce the spirit of wine to proof, with the juice of apricots or peaches, to make this liquor.

*Creme de Noyeau de Martiniq e.*

Take twenty pounds of loaf sugar ; three gallons of spirit of wine, three pints of orange flower water, one pound and a quarter of bitter almonds, two drachms of essence of lemon, and four and a half gallons of water ; the produce will exceed eight gallons. Put two pounds of the loaf sugar into a jug

or can, pour upon it the essence of lemon, and one quart of the spirit of wine : stir it till the sugar is dissolved, and the essence completely incorporated. Bruise the almonds, and put them into a four gallon stone bottle or cask, add the remainder of the spirit of wine, and the mixture from the jug or can, let it stand a week or ten days, shaking it frequently ; then add the remainder of the sugar, and boil it in the four and a half gallons of water, for three quarters of an hour, taking off the scum as it rises, when cold put it into a cask ; add the spirit of almonds, &c from the stone bottle, and lastly the orange flower water. Bung it down close, and let it stand three weeks or a month ; then strain it through a jelly bag, and when fine, bottle it off ; when the pink colour is wanted, add cochineal, in powder, at the rate of half a drachm, or two scruples to a quart.

*Ratafia d'Ecorces d'Oranges.*

Take of fresh peel of Seville oranges, four ounces, proof spirit two gallons, sugar one pound. Digest for six hours.

*Ratafia de flowers d'Oranges.*

Take of fresh flowers of orange tree, two pounds, proof spirit one gallon, sugar one and a half pounds. Digest for six hours.

*Creme d'Orange, of superior Flavour.*

Take three dozen of middling size oranges,



orange flower water two quarts, loaf sugar eighteen pounds, spirit of wine two gallons, tincture of saffron one and a half ounces, water four and a half gallons. This will produce seven and a half gallons.

Cut the oranges in slices, put them into a cask, add the spirit and orange flower water, let it stand a fortnight, then boil the sugar in the water for half an hour, pour it out, and let it stand till cold, then add it to the mixture in the cask, and put in the tincture of saffron. Let it remain a fortnight longer; then strain, and proceed as directed in the receipt for Creme de Barbades, and a very fine cordial will be produced.

*Ratafia a la Violette.*

Take of florentine orris root, two drachms archel one ounce, spirit of wine four pints. Digest, strain, and add sugar four pounds. Liqueurs are also made, by adding Hungary water, honey water, Eau de Cologne, and several other spirits, to an equal quantity of simple syrup, or common Capillaire,

*Eau de Bigarade.*

Take the outer or yellow part of the peel of fourteen bigarades, a kind of orange, half an ounce of nutmegs, quarter of an ounce of mace, one gallon of fine proof spirit, and two quarts of water. Digest all these together two days, in a close vessel; after which draw off a gallon with a gentle fire, and dulcify with fine sugar.

*To make Usquebaugh.*

Usquebaugh is a strong compound liquor, chiefly taken by way of dram ; it is made in the highest perfection at Drogheda in Ireland. The following are the ingredients, and the proportions in which they are to be used.

Take of the best brandy one gallon, raisins, stoned, one pound, cinnamon, cloves, nutmeg, and cardamons, each one ounce, crushed in a mortar, saffron half an ounce, rind of one Seville orange, and brown sugar candy one pound. Shake these well every day for at least fourteen days, and it will at the expiration of that time, be ready to be fined for use.

*Royal Usquebaugh.*

Take of nutmegs, cloves, and cinnamon, each two ounces, of the seeds of annis, caraway, and coriander, each four ounces ; liquorice root sliced, half a pound, bruise the seeds and spices, and put them together with the liquorice into the still, with eleven gallons of proof spirit, and two gallons of water ; distil with a pretty brisk fire, until the feints begin to rise. As soon as the still begins to work, fasten to the nose of the worm, two ounces of English saffron, tied up in a cloth, that the liquor may run through it, and extract all its tincture. When the operation is finished, sweeten with fine sugar : This liquor may be much improved by the following additions. Digest four pounds of stoned raisins,

three pounds of dates, and two pounds of sliced liquorice root, in two gallons of water for twelve hours. When the liquor is strained off, and has deposited all sediments, decant it gently into the vessel containing the usquebaugh.

*Second.*

For three gallons, take three gallons of spirits, and put to it four ounces of anniseeds, bruised; let it remain for three days, then strain it through a sieve, and scrape four ounces of liquorice, pound it in a mortar, and dry it in an iron pan, but not so as to burn it; then put it into the bottle to your liquor, and let it stand ten days; afterwards take out the liquorice, and put in of cloves, mace, nutmegs, cinnamon and ginger, each half an ounce; dates stoned and sliced, four ounces, raisins stoned, half a pound. Let these infuse ten days, then run it through a filtering bag, and colour it to your own liking. Saffron will give it a yellow colour.

*Third.*

For three gallons, take three gallons of spirits, eight pennyweights of mace, eight pennyweights of cloves, one ounce of cinnamon, twelve pennyweights of coriander seed, twelve pennyweights of ginger, fifteen pennyweights of peach or apricot kernels, fifteen pennyweights of dates, one pound of raisins, half a pound of liquorice root, and three pounds of loaf sugar. Bruise the seeds and kernels in a mortar, and steep them in the spirit for ten or twelve

days ; then stone the dates and raisins, tear the liquorice, and boil them together in two quarts of water, till it is reduced to one ; after which strain it through a cloth, dissolve the sugar in some warm water, and take off the scum quite clean ; then strain off your spirits, and mix the whole together, letting it stand till it is quite fine, as it must not be forced down with fining. If you wish it of a yellow colour, take some saffron, and tie it up in a cloth, then dip and squeeze it into your liquor to what colour you please. If you like it green, boil some tanzy in water, and squeeze it into your liquor as before. Many like it a brown colour, and in that case it must be coloured with burnt sugar.

*Compound Ratafia.*

This is a liquor prepared from different kinds of fruits, and is of different colours according to the fruits made use of. These fruits should be gathered when in their greatest perfection, and the largest and most beautiful of them chosen for the purpose. The following is the method of making red ratifia, fine and soft. Take of black heart cherries twenty-four pounds, black cherries four pounds, raspberries and strawberries, each two pounds. Pick the fruit from their stalks, and bruise them, in which state let them continue twelve hours ; then press out the juice, and to every pint of it, add a quarter of a pound of sugar. When the sugar is dissolved, run the whole through a filtering bag, and add to it three quarts of proof spirit. Then take

of cinnamon four ounces, mace one ounce, and cloves two drachms. Bruise these spices, put them into an alembic with a gallon of proof spirit, and two quarts of water, and draw off a gallon with a brisk fire. Add as much of this spicy spirit to the ratafia as will render it agreeable ; about one fourth is the usual proportion. Ratafia made according to this receipt, will be of very rich flavour and elegant colour.

*Another Dry Compound Ratafia.*

Take of cherries and gooseberries, each thirty pounds ; mulberries seven pounds, raspberries ten pounds. Pick all these fruits clean from their stalks, &c. bruise them, and let them stand twelve hours ; but do not suffer them to ferment. Press out the juice, and to every pint add three ounces of sugar. When the sugar is dissolved, run it through the filtering bag, and to every five pints of liquor, add five pints of spirits, together with the same proportion of spirit drawn from spices.

*Common Ratafia.*

Take of nutmegs eight ounces, bitter almonds ten pounds, Lisbon sugar eight pounds, ambergris ten grains. Infuse these ingredients three days in ten gallons of proof spirit, and filter it through a flannel bag for use. The nutmegs and bitter almonds must be bruised, and the ambergris rubbed with the sugar in a marble mortar, before they are infused in the spirit.



*Second.*

For three gallons, take six quarts of spirits, six grains of ambergris, two ounces of peach and apricot kernels, five ounces of bitter almonds, one pint and a half of spirit of wine, and two pounds of sugar. Fill up with water.

*Third.*

Take one quart of brandy or good spirits, four ounces of apricot or peach kernels, a quarter of an ounce of bitter almonds ; bruise your kernels in a mortar, with a spoonful of brandy, and then put them together into a bottle with a quarter of a pound of loaf sugar ; let it stand till it has imbibed the taste of the kernels, then pour it out into a bottle, and cork it close. You may increase the quantity of spirits to your kernels, if you choose.

*Remark.* A fine Ratafia may also be made from the expressed juice of peaches, treated as above ; except as to the spices, which will destroy the fine flavour of the peach.

*Ratafia from Peaches.*

To every gallon of peach juice, add four pounds of sugar, stir the liquor till the sugar is dissolved, then run the whole through a filtering bag, and add three gallons of pure neutralized spirits.

Also the juice of our cherries, may be made the foundation for cordials, with a judicious use of spices, equal to any of the celebrated foreign cordials.

## **CORDIALS.**

### *General Rules.*

The perfection of this grand branch of distillery depends upon the observation of the following general rules, which are easy to be observed and practiced.

1. The artist must always be careful to use a well cleansed spirit, or one freed from its own essential oil. For as a compound cordial is nothing more than a spirit impregnated with the essential oil of the ingredients, it is necessary that the spirit should have deposited its own.

2. Let the time of previous digestion be proportioned to the tenacity of the ingredients, or the ponderosity of their oil.

3. Let the strength of the fire be proportioned to the ponderosity of the oil, intended to be raised with the spirit.

4. Let a due proportion of the finest parts of the essential oil be united with the spirit; the grosser and less fragrant parts of the oil not giving the spirit so agreeable a flavour, and at the same time rendering it thick and unsightly. This may in a great measure be effected by leaving out the feints, and making up to proof with fine soft water in their stead.

A careful observation of these four rules, will render this extensive part of distillation far more per-

fect than it is at present. Nor will there be any occasion for the use of burnt alum, white of eggs, Isinglass, &c. to fine down the cordial waters, for they will presently be fine, sweet, and pleasant tasted, without any further trouble.

*To Make Anisseed Cordial.*

Take of anisseed bruised, two pounds, proof spirit twelve and a half gallons, water one gallon. Draw off ten gallons with moderate fire. This water should never be reduced below proof; because the large quantity of oil with which it is impregnated, will render the goods milky and foul, when brought down below proof. But if there is a necessity for doing this, their transparency may be restored by filtration.

N. B. This cordial is used by all classes of people in the United States.

*Another.*

For three gallons, take seven quarts of spirits, five pennyweights of the oil of anisseed, one pound of loaf sugar, one gill of spirits of wine, and fill up with water. Fine this with alum only, but kill your oil as before mentioned.

*To Make Cinnamon Cordial.*

Take two pennyweights of the oil of Cassia, dissolved with sugar and spirit of wine; one and a half gallons, at one in six; cardamon seeds husked,

one ounce, orange and lemon peel dried, of each one ounce. Fine with half a pint of alum water; sweeten with loaf sugar, not exceeding two pounds, and make up two gallons measure with the water in which the sugar is dissolved. Colour with burnt sugar.

*Another.*

For three gallons take two gallons of spirits, one pennyweight and a half of oil of cassia, half a pennyweight of the oil of orange, two drops of the oil of caraway, half an ounce of cinnamon, two pounds of loaf sugar. Colour it with burnt sugar, and fine it with a little isinglass.

*Caraway Cordial.*

For twenty gallons, take one and a half ounces of oil of caraway, twenty drops of cassia lignia oil, three drops of essence of orange peel, three drops of the essence of lemon, thirteen gallons of spirits one in five, and eight pounds of loaf sugar. Make it up, and fine it down.

*Another.*

For three gallons, take seven quarts of spirits, three pennyweights of the oil of caraway, two ounces of cassia, two pounds of loaf sugar, one gill of spirit of wine, and fill up with water. The cassia and caraway seeds must be well pounded and steeped for three or four days in a quart of the spirit, and the oil must be killed the same way as for the gin; fine and work it also the same.

*Wormwood Cordial.*

For three gallons, take two gallons of spirits, two pennyweights of the oil of orange, two pennyweights of the oil of caraway, one pennyweight of the oil of wormwood, a quarter of an ounce of almond cake, half an ounce of coriander seed, half an ounce of Virginia snake-root, half a pound of sugar; and fill up with water. Steep the coriander seed, almond cake, and Virginia snake root, in the spirit for three or four days, and kill the oils as before mentioned.

*Cedrat Cordial.*

The Cedrat is a species of citron, and very highly esteemed in Italy, where it grows naturally; the fruit is difficult to be procured in this country, but as the essential oil is often imported from Italy, it may be made with it as follows; take of the finest loaf sugar, powdered, a quarter of a pound, put it into a glass mortar, with one hundred and twenty drops of the essence of cedrat; rub them together with a glass pestle, and put them into a glass alembic, with a gallon of fine proof spirit, and a quart of water. Place the alembic, in a bath heat, and draw off one gallon, or till the feints begin to rise; then dulcify with fine sugar; This is considered the finest cordial yet known: it will therefore be necessary to be particularly careful that the spirit is perfectly clean, and, as much as possible, free from any flavour of its own.



*Citron Cordial.*

Take of dry yellow rinds of citrons three pounds, orange peel two pounds, nutmegs bruised, three quarters of a pound, proof spirit ten and a half gallons, water one gallon. Digest with a gentle heat; then draw off ten gallons in a bath heat, and dulcify with fine sugar.

*Second.*

For three gallons, take seven quarts of spirits, twelve pounds of figs, four pounds of prunes, two pennyweights of the oil of orange, three pennyweights of the essence of lemon, ten drops of the oil of cloves, two pounds of sugar. Fill up with water.

N. B. The figs and prunes must be bruised, and steeped in the spirits for eight or ten days. Kill the oils and essence the same as for gin. Most people choose to have citron of a pale green colour; to make which, boil some spinnage, and squeeze the juice into your citron.

*Third.*

To one gallon of brandy, or spirits, take ten citrons; pare off the outer rinds, and dry them very well in the sun, then beat the remaining part of the citrons to a mash in a mortar, and put it into the brandy; stop it close, and let it stand nine or ten days; then draw off the liquor clean from the bot-

toms into another bottle, take the rinds that are dry, beat them to powder, and infuse them nine days again in the spirit; after which draw it off into a clean bottle, and sweeten it to your taste, with loaf sugar; then bottle it off for use.

*Clove Cordial.*

Take of cloves, bruised, four pounds, pimento or allspice, half a pound, proof spirit, sixteen gallons. Digest the mixture twelve hours, in a gentle heat, and then draw off fifteen gallons, with a pretty brisk fire, the water may be coloured red, either by a strong tincture of cochineal, alkanet, or corn poppy flowers. It may be dulcified at pleasure, with double refined sugar.

*Another.*

For three gallons, take two gallons of spirits, half a pound of clove pepper, two pennyweights of the oil of cloves, one pint of elder juice, one pound and a half of loaf sugar. Fill up with water. To colour it put some archil in a bag, and press it into the spirit till it becomes a deep red, and let it fine of itself. If you choose it white, leave out the elder juice and archil, and fine it the same way as geneva.

*Coriander Cordial.*

For three gallons, take seven quarts of spirits, two pounds of coriander seed, one ounce of caraway

seed, six drops of the oil of orange, two pounds of sugar. Fill up with water.

**N. B.** The coriander and caraway seeds must be bruised and steeped in the spirits for ten or twelve days, and well stirred two or three times a day. Fine it the same as you do geneva.

*Golden Cordial.*

Take of the roots of angelica, sliced, four pounds, raisins stoned, two pounds, coriander seeds half a pound, caraway seeds and cinnamon, each half a pound, cloves two onnces, figs and liquorice root sliced, each one ounce, proof spirit eleven gallons, water two gallons. Digest for two days, and draw off by a gentle heat till the feints begin to rise; hang in a piece of linen fastened to the mouth of the worm, containing an ounce of English saffron. Then dissolve eight pounds of sugar in three quarts of rose water, and add to it the distilled liquor.

The above cordial derives its name from a quantity of leaf gold being formerly added to it.

*Second.*

For two gallons, take two gallons of spirits, two drachms and a half of double perfumed alkermes, one quarter of a drachm of oil of cloves, one ounce of spirit of saffron, three pounds of loaf sugar powdered, and one book of leaf gold.

**N. B.** First put your brandy in a large bottle, then put three or four spoonfuls of it into a small

cup ; mix your alkermes in it, and then put in your oil of cloves, and mix that : do the like with the spirit of saffron, and pour all into the bottle of brandy. Afterwards put in your sugar, then cork your bottle, and tie or wire the cork ; shake it well together frequently for three or four days, and let it stand for a fortnight. You must set the bottle so, that when racked off into other bottle, it will only be gently tilted. Put into every bottle two leaves of gold, cut small. You may put two quarts of spirits to the dregs, and it will make a good cordial, though inferior to the first.

*Thurd.*

One gallon of brandy or spirits, two pounds of loaf sugar, one drachm of confection alkermes, one drachm of oil of cloves, and one ounce of spirit of saffron.

N. B. Powder the sugar, and mix it in the brandy ; then put in the rest, and stir it all one way for a quarter of an hour.

*Loveage Cordial.*

For twenty gallons, take of the roots of fresh loveage, valerian, celery, and sweet fennels, each four ounces, essential oil of caraway and savin, each one ounce, spirit of wine one pint, proof spirit twelve gallons, loaf sugar twelve pounds. Steep the roots and seeds in the spirit for fourteen days ; then dissolve the oils in the spirit of wine, and add

them to the undulcified cordial, draw off from the other ingredients ; dissolve the sugar in the water for making up, and fine, if necessary, with alum.

*Another.*

For three gallons, take six quarts of spirits, one quart of spirits of wine, one pound and a half of celery, six pennyweights of mace, six pennyweights of cinnamon, ten drops of the oil of caraway, and two pounds of sugar. Fill up with water,

N. B. The celery must be cut small, the mace and cinnamon pounded in a mortar, and the whole steeped for three days in the spirit of wine. The oil of caraway must be killed as for gin. Fine with alum only, and colour it very pale with burnt sugar.

*Lemon Cordial.*

Take of dried Lemon peel, four pounds—proof spirit, ten and a half gallons, water one gallon. Draw off ten gallons by a gentle fire, and dulcify with fine sugar.

*To make Nectar.*

For twenty gallons, take fifteen gallons of red ratafia, quarter of an ounce of cassia oil, and an equal quantity of the oil of caraway seeds. Dissolve in half a pint of spirit of wine, and make up with orange wine, so as to fill up the cask, sweeten if wanted, by adding a small lump of sugar in the glass.



*Nectar another Way.*

For three gallons, peel eighteen lemons very thin and steep the peelings for forty eight hours in a gallon of brandy; then add the juice, with five quarts of spring water, three pounds of loaf sugar, and two nutmegs grated; stir it till the sugar is dissolved, then pour in three quarts of new milk, boiling hot, and let it stand two hours, after which run it through a jelly bag till fine. This is fit for immediate use, but may be kept for years in bottles, and will be improved by age.

*Imperial Nectar.*

For three gallons, take six quarts of spirits, two quarts of raisin wine, two ounces of peach and apricot kernels, one pennyweight of oil of orange, half a pennyweight of oil of cloves, a quarter of an ounce of mace, two large nutmegs, half a pint of spirits of wine, and two pounds of loaf sugar. Fill up with water.

N. B. The kernels, mace, and nutmegs, must be bruised in a mortar, and steeped in some spirits for eight or ten days. Colour it with burnt sugar, of a fair brown colour, and let it stand to fine itself.

*Irish Nectar.*

The nectar of the Irish, was composed of honey, wine, ginger, pepper, and cinnamon. The French Poets spoke of it with rapture, in the thirteenth century, as being most delicious. They regarded as

the very perfection of human ingenuity, the union of the juice, and spirit of the grape, with the perfume of foreign aromatics so highly prized in the same liquor.

*Queen's Cordial.*

For three gallons, take seven quarts of spirits, one pennyweight and a half of the oil of mint, one pennyweight of the oil of caraway, one ounce of coriander seeds, one ounce of caraway seeds, half an ounce of cassia, quarter of an ounce of mace, one pint of spirits of wine, and two pounds of loaf sugar. Fill up with water.

N. B. The seeds, cassia, and mace, must be bruised, and steeped in the spirit for three or four days, and well shaken twice a-day. The oils must be killed as for the gin. Fine with alum only.

*Prince's Cordial.*

For three gallons, take two quarts of cherry brandy, one quart of raspberry brandy, one quart of raisin wine, one gallon of spirits, six pennyweights of the acid of vitriol, ten drops of the oil of caraway, ten drops of the essence of lemon, half a pint of the spirits of wine, and one pound and a half of sugar. Fill up with water. Fine it with alum and salt of tartar.

*Prince's Cordial another Way.*

For three gallons, take one quart of cherry brandy, one gallon of spirits, one quart of red currant wine, one quart of orange wine, half an ounce of

mace, a quarter of an ounce of cloves, a quarter of an ounce of cinnamon, half an ounce of coriander seeds, half an ounce of caraway seeds, four drops of the oil of orange, four drops of the essence of lemon, and two pounds of loaf sugar. Fill up with water.

N. B. The mace, cloves, cinnamon, caraway, and coriander seeds, must be bruised in a mortar, and steeped in the spirit for five or six days. The oil and essence must be killed the same way as for gin. Colour with burnt sugar.

*To make Noyeau.*

Take one and a half gallons of French brandy, six dozen of the best French prunes, two ounces of celery, three ounces of the kernels of apricots, nectarines, and peaches, and one ounce of bitter almonds, all gently bruised ; essence of orange peel and essence of lemon peel, of each two pennyweights, half a pound of loaf sugar. Let the whole stand ten days or a fortnight ; then draw off, and add to the clear Noyeau, as much rose water as will make it up to two gallons.

*Orange Cordial.*

Take of the yellow part of fresh orange peels, five pounds, proof spirit ten and a half gallons, water two gallons. Draw off ten gallons with a gentle fire.

*Peppermint Cordial.*

For twenty gallons, take thirteen gallons of rectified spirits, one in five under Hydrometer proof, twelve pounds of loaf sugar, one pint of spirit of wine, that will fire gun powder, thirteen pennyweights troy, of oil of peppermint; water as much as will fill up the cask, which should be set upon end, after the whole has been well roused, and a cock for drawing off placed in it.

It is thought unnecessary to give any more receipts on this subject, as it will be essentially necessary for the cordial distiller to consult the public taste in his compound, to have a correct taste himself, and be well acquainted with the different strengths and qualities of drugs and spices; he can then vary his compounds, as is most suitable, and according to the prevailing taste, and always present to his customers, something new and agreeable.

## **SALTING AND CURING BEEF, PORK, AND FISH.**

1. In the summer season, especially, meat is frequently spoiled by forgetting to take out the kernels in beef; one in the udder of a round of beef, in the fat in the middle of the round; those about the thick end of the flank, &c. if these are not taken out, all the salt in the world will not keep the meat.

The art of salting meat is, to rub in the salt, thoroughly and evenly into every part, and to fill all the holes full of salt where the kernels were taken out, and where the butchers' skewers were.

A round of beef of twenty-five pounds, will take a pound and a half of salt to be rubbed in all at first, and requires to be turned and rubbed every day with the brine: it will be ready for dressing in four or five days, if you do not wish it very salt.

In Summer, the sooner meat is salted after it is killed the better, and care must be taken to defend it from the flies.

In frosty weather, take care the meat is not frozen, and warm the salt in a frying pan. The extremes of heat and cold are equally unfavourable for the process of salting. In the former, the meat changes before the salt can effect it, in the latter, it is so hardened, and its juices are so congealed, that the salt cannot penetrate it.



If you wish it red, or if you want to keep it a long time, rub it first with salt petre and moist sugar; the salt petre must be pounded fine, and the sugar mixed with it, and the mixture made warm before the fire; mix one ounce of this mixture with one pound of common salt, rub this well into the beef as before directed.

You can if you wish, impregnate the meat with a very agreeable vegetable flavour, by pounding some sweet herbs and an onion with the salts, and if you choose, you can add a quarter of an ounce of black pepper and some alspice with the sweet herbs and salts; incorporate these ingredients by pounding them together in a mortar, then rub the meat well with the above mixture, turning it and rubbing it every day for a fortnight. This you will find will keep any length of time.

An H Bone of ten or twelve pounds weight, will require about three quarters of a pound of salt, and an ounce of moist sugar to be well rubbed into it; it will be ready in four or five days, if turned and rubbed every day.

The time meat requires salting, depends upon the weight of it, how much salt is used; if it be rubbed in with a heavy hand it will be ready much sooner, than if only lightly rubbed.

N. B. Dry the salt and rub it with the sugar in a mortar.

*Pork*, requires a longer time to cure (in proportion to its weight) than beef; a leg of pork should be in salt eight or ten days; turn it and rub it every

day. The above methods of curing and pickling will answer equally as well for pork.

*Another Mode for Curing Pork.*

Take four gallons of soft river water, add one pound of brown sugar, four ounces of salt petre, and eight pounds of salt. Boil all these together, and carefully take off the scum as it rises; when clear, let it remain till cold, then pour it over the meat till covered, and the quantity of pickle must be increased according to the quantity of meat; the meat must not be pressed, but put lightly into a cask, and remain in for six or seven weeks, when it will be fit to smoke.

*To Cure Hams.*

Take one pound and a quarter of salt, one ounce of salt petre, and sufficient molasses to form a paste, which rub well into the hams. Let them lie thirty days; this is sufficient for one ham.

*Another Method.*

Rub on an ounce and a quarter of salt petre, hang it up for three days, then beat it well with a rolling pin, and rub in the following ingredients all well beaten, viz. a quarter of an ounce of salt prunella, five ounces of bay salt, and ten ounces of common salt. Lay it across two sticks over a pan, for a fortnight, basting it with the brine which runs from it.

N. B. The above is sufficient for a ham of twenty pounds weight, and must be properly dried.

*To Cure Hams as is Practiced in Virginia.*

'Take six pounds of fine salt, three pounds of brown sugar, or three pints of molasses, and one pound of salt petre powdered ; mix all these together ; to serve for twenty hours ; rub each ham well all over with this mixture, and pack them down in a cask or tub, and let them so remain for five or six days ; then turn them, and sprinkle some salt slightly over them, and so let them remain five or six days longer, then add brine or pickle strong enough to bear an egg, and let them remain covered with it for a month, when they will be fit to smoke.

Hams cured after this manner will be sweet and good for any length of time.

*Another Method.*

For three hams, pound and mix together, half a peck of salt, half an ounce of salt prunella, four ounces of salt petre, and four pounds of coarse sugar, rub the hams well with this, and lay what is to spare over them, let them lie three days, then hang them up. Take the pickle in which the hams were, put water enough to cover the hams, with more common salt, until it will bear an egg, then boil and skim it well, and put it in the salting tub, and the next morning put in the hams ; keep them down the same as pickled pork ; in a fortnight take them out of the liquor, rub them well with the brine, and hang them up to dry.

*To Dry Salt Beef and Pork.*

Lay the meat on a table, or in a tub with a double bottom, that the brine may run off as fast as it forms, rub the salt well in, and be careful to apply it to every niche; afterwards put it into either of the above utensils, when it must be frequently turned; after the brine has ceased running, it must be quite buried in salt, and kept closely packed. Meat which has had the bones taken out is the best for salting. In some places the salted meat is pressed by heavy weights, or a screw, to extract the moisture sooner.

*To Cure Herrings, Mackerel, Shad, &c. &c.*

Reservoirs of any size, vats, or casks, perfectly water tight, should be about half filled with brine, made by dissolving about twenty-eights parts of solid salt in seventy-two of fresh water. The fish, as fresh as possible, gutted or not, must be plunged into this, fully saturated brine, in such quantity as nearly to fill the reservoir; and, after remaining quite immersed five or six days, they will be fit to be packed as usual, with large grained solid salt, and exported to the hottest climates. As brine is always weakest at the upper part, in order to keep it of a uniform saturation, a wooden lattice work frame, of such size as to be easily let into the inside of the reservoir, is sunk an inch or two under the surface of the brine, for the purpose of suspending upon it a lump of one or two pounds, or larger

of solid salt, which effectually saturates whatever moisture may exude from the fish ; and thus, the brine will be continued of the utmost strength, so long as any part of the salt remains undissolved. The solidity of the lumps admits of their being applied several times, or whenever the reservoirs are replenished with fish ; and the brine, although repeatedly used, does not putrify ; nor do the fish, if kept under the surface, ever become rancid.

All provisions are best preserved by this method, especially bacon, which, when thus cured, is not so liable to become rusty, as when done by the usual method of rubbing with salt.

#### *Another Method of Curing Fish.*

Let the fish be well cleaned and laid in salt and water for two hours, let the water drain from them, and then wet them with the pyroligneous acid, they may be split or not, they are then to be hung in a dry situation for a day or two or a week or two, if you please ; or as long as you wish to keep them. They will keep sweet for any length of time.

N. B. The pyroligneous acid, applied in the same way to beef or mutton, gives the fine smoke flavour, and may be kept for any length of time.

#### *To Pickle Meat.*

Six pounds of salt, one pound of sugar, and four ounces of salt petre, boiled with four gallons of water, skimmed and allowed to cool, forms a very strong pickle, which will preserve any meat immersed in



it. To effect this, which is essential, either a heavy board or a flat stone must be laid upon the meat. The same pickle may be used repeatedly, provided it be boiled up occasionally with an addition of the salts, to restore its strength, diminished by the combination of part of the salts with the meat, and by the dilution of the pickle by the juices of the meat extracted. By boiling, the albumen which would cause the pickle to spoil, is coagulated and rises in the form of scum, which must be carefully removed.

*To Pickle in Brine.*

A good brine is made of bay salt and water, thoroughly saturated, so that some of the salt remains undissolved; into this brine, the substances to be preserved are to be plunged, and kept covered with it. Among vegetables, French beans, artichokes, olives, and the different sorts of samphire, may be thus preserved, and among fish, herrings.

*Another Method.*

Mix brown sugar, bay salt, and common salt, each two pounds, salt petre eight ounces. water, two gallons boil, the whole together and skim off the scum, and when cold, plunge in the meat, &c.

This pickle gives meats a fine red colour, while the sugar renders them mild and of excellent flavour. Large quantites are to be managed by the above proportions.

*Third.*

Take eight gallons of water, three pounds of brown sugar, six ounces of salt petre, one quart of wood ashes, nine pounds of common salt, boil and skim them well. When cold, pour over your beef, which will be sufficient for one hundred pounds.

*To Pickle Salmon.*

Boil the fish gently till done, and take it up, strain the liquor, add bay leaves, pepper corns, and salt; give these a boil, and when cold, add the best vinegar to them; then put the whole sufficiently over the fish to cover it, and let it remain a month at least

*To Pickle Salmon, Herrings, Mackerel, Shad &c.*

Cut the fish into proper pieces, do not take off the scales, make a brine strong enough to bear an egg, in which boil the fish; it must be boiled in just liquor enough to cover it; do not over boil it. When the fish is boiled, lay it slantingly to drain off all the liquor, when cold, pack it close in kits or kegs, and fill them up with equal parts of the liquor, the salmon was boiled in (having first well skimmed it) and best vinegar; let them rest for a day, fill up again, striking the sides of the kit or keg with a coopers adze, until the keg will receive no more, then head them down as close as possible.

*Observation.*—This is in the finest condition when fresh Salmon is most plentiful, about midsummer :

the season for it, is from February to September. Some sprigs of fresh gathered fennel are the accompaniments.

N. B. The three indispensable marks of the goodness of Pickled Salmon, are, 1st. the brightness of the scales, and their sticking fast to the skin; 2nd. the firmness of the flesh; and 3d. its fine pale red rose colour; without these it is not fit to eat, and was either stale before it was pickled, or had been kept too long after.

N. B. The above was given us as the actual practice of those who pickled it for the London market.

*To Pickle artificial Anchovies.*

To a peck of sprats, put two pounds of salt, three ounces of bay salt, one pound of salt petre, two ounces of salt prunella, and a few grains of cochineal; pound all in a mortar, put into a stone jar first a layer of sprats, and then one of the compound, and so on alternately, to the top. Press them down hard; cover them close for six months, and they will be fit for use, and will really produce a most excellent flavoured sauce.

*To Pickle, Herrings, Mackerel, Shad, &c.—Another method.*

Procure them as fresh as possible, split them open, take off the heads, and trim off all the thin part of the belly; put them into salt and water for one hour, drain and wipe your fish, and put them into jars or casks, with the following preparation,

which is enough for three dozen mackerel. Take salt and bay salt, one pound each, salt petre and lump sugar, two ounces each ; grind and pound the salt, &c. well together, put the fish into jars or casks, with a layer of the preparation at the bottom, then a layer of mackerel, with the skin side downwards ; so continue alternately, till the cask or jar is full ; press it down and cover it close. In about three months they will be fit for use.

*To preserve fish by sugar.*

Fish may be preserved in a dry state, and perfectly fresh, by means of sugar alone, and even with a very small quantity of it.

Fresh fish may be kept in that state for some days, so as to be as good when boiled, as if just caught. If dried and kept free from mouldiness, there seems no limit to their preservation ; and they are much better in this way than when salted. The sugar gives no disagreeable taste.

This process is particularly valuable in making what is called kippered salmon ; and the fish preserved in this manner are far superior in quality and flavour, to those which are salted or smoked. If desired, as much salt may be used as to give the taste required ; but this substance does not conduce to their preservation.

In the preparation, it is barely necessary to open the fish, and to apply the sugar to the muscular parts, placing it in a horizontal position for two or three days, that this substance may penetrate.

After this it may be dried; and it is only further necessary to wipe and ventilate it occasionally, to prevent mouldiness.

A table spoonful of brown sugar is sufficient in this manner, for a salmon of five or six pounds weight, and if salt is desired, a teaspoon full or more may be added; salt petre may be used instead, in the same proportion, if it is desired to make the kipper hard.

*To preserve fish and meat in the Portuguese manner.*

The Portuguese make a trade of what they call pesche moliaë, which is fish cut in small pieces, and cured with salt and sugared tamarind. Fish thus preserved may be carried to sea, and will not be found too salt. Meat may also be thus preserved, by throwing away the stones and strings of the tamarinds, and adding a small portion of cayenne pepper.

*Easy Method of Preserving Animal Food Sweet for Several Days, in the height of Summer.*

Veal, mutton, beef, or venison, may be kept for nine or ten days, perfectly sweet and good, in the heat of summer, by lightly covering the same with bran, and hanging it up in a high and windy room; therefore, a cupboard full of small holes, or a wire safe, so as the wind may have a passage through, is recommended to be placed in such a room, to keep away the flies.

*To Preserve Game in Hot Weather.*

Game and poultry may be preserved a long time, by tying a string tight round the neck, so as to ex-



clude the air, and by putting a piece of charcoal into the vent.

*To Sweeten Meat, Fish, &c. that is Tainted.*

When meat, fish, &c. from intense heat, or long keeping, are likely to pass into a state of corruption, a simple and pure mode of keeping them sound and healthful, is by putting a few pieces of charcoal, about the size of an egg, into the pot or sauce pan, wherein the flesh or fish are to be boiled. Among others, an experiment of this kind was tried upon a turbot, which appeared too far gone to be eatable; the cook was advised to put three or four pieces of charcoal, each the size of an egg, under the strainer in the fish kettle, after boiling the proper time. the turbot came to table perfectly sweet and firm.

*To Purify Fly-Blown Meat.*

It has been successfully proved, by many experiments, that meat entirely fly-blown, has been sufficiently purified to make good broth, or soup, and had not a disagreeable taste, by being previously put into a vessel containing a certain quantity of beer. The liquor will become tainted, and have a putrid smell.

*Method of Preserving Eggs*

Eggs keep very well, when you can exclude the air from them; which is best done by placing a grate in any running water, and putting eggs as the hens lay them, on the upper side of the grate, and there let them lie, covered with water, till you are going to use them; when you will find them as good as if

they had been laid that day. This way answers much better than if they had been greased, as sometimes one place is missed, which spoils the whole egg: even those that are fresh, never eat so well. In places where people are afraid their eggs will be stolen, they should make a chest with a number of holes in it, that the water may get in it, the top of which being above the water, may be locked down. Mill dams are the most proper for these chests or grates. The water must continually cover the eggs, or they will spoil.

*Second.*

Eggs may be preserved for twelve months, in a sweet and palatable state for eating in the shell, or using for other purposes, by boiling them for one minute; and when wanted for use let them be boiled in the usual manner; the white may be a little tougher than a new laid egg, but the yolk will show no difference.

*Third.*

Apply with a brush, a solution of gum Arabic to the shells, or immerse the eggs therein, let them dry, and afterwards pack them in dry charcoal dust; this prevents their being affected by any alterations of temperature.

*To Preserve Eggs perfectly Fresh for twelve Months.*

Provide good, sound, close barrels, fill them with fresh laid eggs; then pour into each cask, the head of which is supposed to have been first taken out, as much thick lime water as will fill up all the void spaces between the eggs, and likewise completely

cover them. The thicker the lime water is the better, provided it will fill up all the interstices and be liquid at the top of the cask ; this done, lay on the head of the cask lightly. No farther care is necessary, than merely to prevent the lime from growing too hard, by adding occasionally a little water on the surface, should it seem necessary, and keeping the casks from heat and frost. The eggs when taken out, are to be washed from the adhering lime with a little cold water, when they will have both the appearance and qualities of fresh laid eggs, the lime preserving them from shrinking or putridity.

N. B. The casks can be headed up, if the eggs are intended to be kept a long time before they are wanted, and this method will be preferable, as the air being excluded from the cask, the lime water will not evaporate.

*To Preserve Eggs Fresh and Good for Two Years.*

For this process, a patent was granted in February, 1791, to Mr. Jayne, of Sheffield, Yorkshire, England.

Put into a good close barrel one bushel of quick lime, three pounds of salt, twelve ounces of cream of tartar, and mix the same well together, with as much water as will cause an egg to swim in it, then put and keep the eggs therein, which will preserve them perfectly sound for the space of two years at the least.

This is an excellent method for those who deal largely in eggs ; the barrels can be headed up and sold whole. It would also be an advantage to the farmer to make a barrel of this composition, and

put the eggs in as the hens lay them, when the barrel is full head it up, and they are ready for the market, and are always fresh and good.

## PICKLES AND PRESERVES.

This branch of domestic economy comprises a great variety of articles, which are essentially necessary to the convenience of families. It is at the same time too prevalent a practice to make use of brass utensils in order to give pickles a fine colour.

This pernicious custom is easily avoided by heating the liquor and keeping it in a proper degree of warmth before it is poured upon the pickles. Stone jars are the best adapted for sound keeping. Pickles should never be handled with the fingers, but by a spoon kept for that purpose. It is also necessary they should be kept from the air, or they will inevitably be spoiled. If in stone jars, they should be made air tight, or if kept in glass bottles, they should be well corked, and sealed with wax.

With respect to pickles, it would be advisable for the grocers to make up a quantity of the different kinds, in their leisure hours, and instead of their present mode of preparing and selling them, it would be preferable to procure a quantity of glass bottles with wide mouths, similar to those which the tobacconists put snuff in, and fill them with the pickle, corking them up close, and dipping the top of the bottles in hot sealing wax ; by this method

the air will be excluded from the pickles, they will be always in good preservation, and the bottle sold entire. If they are made according to the following directions, they will be of a much superior quality to those generally sold by the grocers at present, and at least equal to those imported from London. The price of course must be proportionable, and I am very much mistaken if respectable families will not greatly prefer pickles put up in this manner. As to the additional expense of the bottle, this needs not be any object to the consumer, as it will be convenient to keep the pickles in while in use, and when used, the grocer can take the bottle back at the given price, in order to make the same use of it again, he can also put up an additional quantity, in order to supply others who do not choose to be at the trouble of preparing them; by this means the sale of them would become general, and I am persuaded a much more profitable, convenient, and respectable mode, than the one at present pursued.

*To Pickle Onions.*

Put a sufficient quantity of small round onions into salt and water for nine days, observing to change the water every day; next put them into jars and pour fresh boiling salt and water over them, cover them up close till they are cold, then make a second decoction of salt and water, and pour it on them boiling hot. When it is cold, drain the onions on a hair sieve, and put them into wide mouthed bottles; fill them up with the best vinegar, (or distilled vinegar,) put into every bottle a slice or two of ginger, a blade of mace,



and a teaspoonful of sweet oil ; which will keep the onions white. Cork them well up and set them in a dry place.

*Another.*

Take small round onions, about as big as a nutmeg, make a very nice pickle. Take off their top coats, have ready a stew pan, three parts filled with boiling water, into which put as many onions as will cover the top ; as soon as they look clear, immediately take them up with a spoon full of holes, and lay them on a cloth three times folded, and cover them with another, till you have as many as you wish ; when they are quite dry, put them into jars, and cover them with hot pickle, made by infusing on ounce of horse raddish, an ounce of allspice, an ounce of black pepper and the same quantity of salt, in a quart of the best white wine vinegar, in a stone jar by the fire side, for three days, keeping it well closed ; when cold bung them down tight, and cover them with a bladder wetted with the pickle ; and leather, or put them in bottles corked and sealed.

*To Pickle French Beans.*

Take French beans while young, and cut off the stalks, then take the best vinegar and boil it with salt ; let it stand till cold ; then take the beans, put them into a stone jar, and put the boiled vinegar and salt to them, cover the jar close and let them stand for three weeks, then take the pickle and boil it again, and add to it according to the following proportion. For every quart of pickle, add one

ounce of black pepper, one ounce of ginger, one ounce of horse raddish cut in slices, one ounce of salt, half an ounce of allspice, and half a drachm of cayenne pepper. Let the whole of these boil a few minutes, then pour them with the pickle boiling hot on the beans in the jar, cover the jar up close, by tying on it a piece of bladder, and on the top of this a piece of leather ; in three days time they will be fit for use, but if put into bottles for keeping or for sale, it can be done immediately, as soon as the pickles are cool.

*To Pickle Red Cabbage.*

Get a fine purple cabbage ; take off the outside leaves, quarter it, take out the stalk, shred the leaves into a cullender, sprinkle them with salt, let them remain till the morrow, drain them dry, put them into a jar, and cover them with the pickle ordered for beet roots.

*To Pickle Walnuts.*

Make a brine of salt and water, in the proportion of a quarter of a pound of salt to a quart of water, put the walnuts into this to soak for a week, or if you wish to soften them so that they may be soon ready for eating, run a larding pin through them in half a dozen places. This will allow the pickle to penetrate, and they will be much softer and of better flavour, and ready much sooner than if not perforated ; put them into a stew pan with such brine, and give them a gentle simmer ; put them on a sieve to drain, then lay them on a fish plate, and let them stand in the air till they turn black ; this

may take a couple of days, put them into glass or stone jars, fill these about three parts full with the walnuts, and fill them up with the following pickle.

To each quart of the strongest vinegar, put an ounce of black pepper, same of ginger, same of shallots, same of salt, and half an ounce of allspice, and half a drachm of cayenne. Put these into a stone jar, cover it with a bladder wetted with the pickle, tie over that some leather, and set the jar on a trivet by the side of the fire, for three days, shaking it up three times a day, and then pour it while hot on the walnuts, and cover them down with bladder, wetted with the pickle ; leather, &c. Or put them in bottles for sale.

#### *To Pickle Cucumbers.*

Let your cucumbers be small, fresh gathered and free from spots ; wash and dry them in a cloth, then put them down in a large stone jar, and make a pickle of salt and water strong enough to bear an egg ; boil the pickle and skim it well, then pour it upon your cucumbers, and put them down close for twenty-four hours ; then strain them, and dry them well with a cloth, and take the best white wine vinegar, with cloves, sliced mace, nutmeg, white pepper corns, long pepper, and races of ginger, as much as you please. Put these into a stone jar close covered with a bladder wetted with the pickle, tie over that some leather, and set the jar on a trivet by the fire, so as to keep hot for three days ; by this means the flavour of the spices is not evaporated ; then pour it while hot, on the cucumbers.

If boiling the pickle is preferred take care it is

close covered up, in order to prevent as much as possible, the flavour of the spices from evaporating. Then pour the pickle boiling hot, on the cucumbers, and bottle them for sale.

*To Pickle Beet Roots.*

Boil gently till they are three parts done, (this will take from an hour and a half to two hours and a half,) then take them out, and when a little cooled, peel them, and cut them in slices about half an inch thick. Have ready a pickle for them, made by adding to each quart of vinegar an ounce of good black pepper, half an ounce of ginger pounded, same of salt, and of horse radish cut in slices, and you may warm it, if you like, with a few capsicums, or a little cayenne; put these ingredients into a jar, stop it close, and let them steep three days by the fire side, then when cold pour the clear liquor on the beet root, which have previously arranged in a jar. Then put them in bottles, cork and seal them, and keep them for sale.

*To Pickle Mushrooms.*

Put the smallest that can be got, into spring water, and rub them with a piece of new flannel dipped in salt, throw them into cold water as they are cleaned, which will make them keep their colour; next put them into a sauce pan with a handful of salt upon them. Cover them close, and set over the fire four or five minutes, or till the heat draws the liquor from them; next lay them betwixt two dry cloths till they are cold; put them into glass bottles, and fill them up with the best vinegar, boiled

with a sufficient quantity of salt, ginger, pepper and mace, and it must be quite cool before it is poured on the mushrooms.

*To Pickle Cauly Flowers.*

Take the closest and whitest cauly flowers you can get, and pull them in bunches, and spread them on an earthen dish, and lay salt all over them ; let them stand for three days to bring out all the water, then put them in earthen jars, and pour boiling salt and water upon them, and let them stand all night, then drain them on a hair sieve, and put them in glass bottles, and fill up your bottles with white wine vinegar, cork them close, seal them, and put them by for use.

*To Pickle Barberries.*

Take of white vinegar and water, of each an equal quantity ; to every quart of this liquor put in half a pound of cheap sugar, then pick the worst of your barberries and put into this liquor, and the best into glasses ; then boil your pickle with the worst of your barberries, and skim it very clean ; boil it till it looks of a fine colour, then let it stand to be cold before you strain it ; then strain it through a cloth, wringing it to get all the colour you can from the barberries ; let it stand to settle, then pour it clear into the bottles ; in a little of the pickle, boil a little fennel ; when cold put a little at the top of the bottle, and cork it close and seal it. To every half pound of sugar, put a quarter of a pound of white salt.



*To Make Sour Kroust.*

Take a large, strong, wooden vessel, or cask, resembling a salt beef cask, and capable of containing as much as is sufficient for the winter's consumption of a family. Gradually break down or chop the cabbages, (deprived of outside green leaves,) into very small pieces ; begin with one or two cabbages at the bottom of the cask, and add others at intervals, pressing them by means of a wooden spade, against the side of the cask, until it is full. Then place a heavy weight upon the top of it, and allow it to stand near to a warm place, for four or five days. By this time it will have undergone fermentation and be ready for use. Whilst the cabbages are passing through the process of fermentation, a very disagreeable, fetid, acid smell is exhaled from them. Now remove the cask to a cool situation and keep it always covered up. Strew aniseseeds among the layers of the cabbages during its preparation, which communicates a peculiar flavour to the sour kroust at another period.

In boiling it for the table, two hours is the period for it to be on the fire. It forms an excellent, nutritious and antiscorbutic food for winter use.

*To Make Walnut Ketchup.*

Take half a bushel of green walnuts, before the shell is formed, and grind them in a cider mill, or beat them in a marble mortar ; then squeeze out the juice through a coarse cloth, and wring the cloth well to get out all the juice ; to every gallon of juice add a quart of red wine, a quarter of a pound

of anchovies, the same of bay salt, one ounce of all-spice, two ounces of long or black pepper, half an ounce of cloves and mace, a quarter of an ounce of ginger, and the same of horse radish, cut in slices ; boil all together till reduced to half the quantity, when it is cold, bottle it and cork it tight, and it will be fit for use in three months.

*To Make Mushroom Ketchup.*

Bruise a quantity of well grown flaps of mushrooms with the hands, and then strew a fair proportion of salt over them ; let them stand all night, and the next day put them into stew pans ; set them in a quick oven for twelve hours, and strain them through a hair sieve. To every gallon of liquor put of cloves, Jamaica black pepper, and ginger, one ounce each, also half a pound of common salt ; set it on a slow fire, and let it boil till half the liquor is wasted ; then put it into a clean pot, and when cold, bottle it for sale.

ON PRESERVES.

Some rules are necessary to be observed in this branch of business. In the first place, observe in making syrups, that the sugar is well pounded and dissolved, before it is placed on the fire, otherwise the scum will not rise well, nor the fruit obtain its fine colour. When stone fruit is preserved, cover them with mutton suet, rendered, to exclude the air, which is sure ruin to them. All wet sweetmeats must be kept dry and cool, to preserve them from

mouldiness and damp. Dip a piece of writing paper in brandy, lay it close to the sweetmeats, cover them tight with paper, and they will keep well for any length of time ; but will inevitably spoil without these precautions.

The fruit if succulent, is first soaked in very hard water, or in a weak alum water, to harden it, and then to be drained ; upon the fruit, either prepared or not ; pour syrup boiling to a candy height, and half cold. After some hours the syrup, weakened by the sauce of the fruit, is to be poured off, reboiled, and poured on again ; and this repeat several times. When the syrup is judged to be no longer weakened, the fruit is to be taken out of it, and well drained.

#### *Peach Preserve.*

Take half a peck of clingstone peaches, wipe them with a flannel cloth, put them into an earthen pot sufficiently large to contain them, fill it up with brandy, let them stand two days covered, then pour off the brandy, to which add half a pint of the same liquor, and four pounds of sugar ; cut two oranges very fine, which add to the syrup, and when boiling hot, pour over the peaches ; the next day set them in a hot oven, let them stand half an hour, then set them away in a cool place. If the weather should be warm, the syrup must be scalded again in six or eight days, adding thereto another half pint of brandy and one pound of sugar, pouring it boiling hot upon the peaches, then set them again in a cool

place. This method of procedure will give them a more fresh and agreeable flavour than any mode yet discovered. *Pears*, by taking out the seeds, may be preserved in the same way.

*Damson Preserve.*

Take four pounds of sugar and one quart of water, boil and scum clean, then run through a jelly bag, to which add one fresh orange cut fine, and half a pint of brandy; to this syrup put the damsons, let them simmer over a gentle fire fifteen minutes; put away for use. Cherries and grapes may be preserved in the same way.

*Apple Preserve.*

Take half a peck of large russet sweetings, otherwise, fair, sweet apples, pare and core them, take two quarts of frost grapes, boil them in one pint of water till soft, squeeze out the juice, add to this the juice of one quart of currants well squeezed; to this add three pounds of sugar, also four whites of eggs, and the shells beat fine, scald and scum clean, then add one pint brandy, strain it through a piece of flannel, then add the apples, and one fresh orange cut fine, boil gently half an hour over a moderate fire, put them in a stone or earthen jar, set in a cool place, and keep them for use.

*Strawberry Preserve.*

Take three pounds of large, fair, strawberries, free from stems or hulls, four pounds of sugar, one

pound raisins, place these in an earthen pot, first sprinkling of sugar, one pound raisins, place them in an earthen pot, first a sprinkling of sugar, then a layer of strawberries, another of raisins, and so alternately, till the whole are placed in the pot, set it away in a cool place ; if the weather should be warm, frequently sprinkle sugar upon them, by which they will be preserved fresh and good.

*To Preserve Strawberries whole.*

Take equal weight of fruit and double refined sugar, lay the former in a large dish, and sprinkle half the sugar in fine powder ; give a gentle shake to the dish, that the sugar may touch the under side of the fruit. Next day make a thin syrup with the remainder of the sugar ; and allow one pint of red currant juice to every three pounds of strawberries ; in this simmer them until sufficiently jellied. Choose the largest scarlets, and dead ripe.

*To Bottle Damsons and all other Fruits.*

Put damsons, before they are too ripe, into wide mouthed bottles, and cork them down tight ; then put them into a moderately heated oven, and about three hours more will do them ; observe that the room is not too hot, otherwise it will make the fruit fly. All kinds of fruits that are bottled may be done in the same way, and they will keep good for two years ; after they are done they must be put away, with the mouth downwards, in a cool place, to keep them from fermenting.



*To Preserve Grapes.*

Take close bunches, whether white or red, not too ripe, and lay them in a stone jar. Put to them a quarter of a pound of sugar candy, and fill up the jar with brandy. Tie them up close with bladder and set them by in a cool place.

*To Preserve Fruits in Brandy or other Spirits.*

Gather plumbs, apricots, cherries, peaches, and other juicy fruits, before they are perfectly ripe, and soak them for some hours in hard, or alum water, to make them firm; as the moisture of the fruit weakens the spirit, it ought to be strong. Therefore add five ounces of sugar to every quart of spirit, put your fruit into a suitable sized jar, and fill it up with the brandy or spirit.

*The American Citron, or Water Melon.*

Take the whole of a large water melon (seeds excepted) not too ripe, cut it into small pieces, take two pounds of loaf sugar, one pint of water, put it all into a kettle, let it boil gently for two hours, then put it up for sale.

*To Preserve Pears, Plumbs, and other Fruits, for Tarts, or Pies.*

Gather them when full grown, and just as they begin to turn, pick all the largest out, save about two thirds of the fruit, to the other third put as much water as you think will cover them, boil and skim them; when the fruit is boiled very soft,

strain it through a coarse hair sieve; and to every quart of this liquor put a pound and a half of sugar, boil it, and skim it very well; then throw in your fruit, just give them a scald; take them off the fire, and when cold, put them into wide mouthed bottles, pour your syrup over them, cork your bottles close, and seal them over, in order to exclude the air, or if they are intended for present use, tie over them a piece of bladder, and over the bladder a piece of paper.

*For Preserving Quinces.*

Take a peck of quinces, pare them, take out the core with a sharp knife, if you wish to have them whole; boil parings and cores, with two pounds of frost grapes, in three quarts of water, boil the liquor an hour and a half, or till it is thick, strain it through a coarse hair sieve, add one and a quarter pound of sugar to every pound of quince, put the sugar into the syrup, scald and skim it till it is clear, put the quinces into the syrup, cut up two oranges and mix with the quinces, hang them over a gentle fire for five hours, when cold put them in bottles well corked and sealed, for sale.

*To Preserve Quinces in Loaf Sugar.*

Take a peck of quinces, put them into a kettle of cold water, hang them over the fire, boil them till they are soft, then take them out with a fork, when cold, pare them, quarter or half them if you like; take their weight of loaf sugar, put into a kettle or sauce pan, with one

quart of water, scald and skim it till it is very clear, then put in your quinces, let them boil in the syrup for half an hour, add oranges as before if you like, then put them up in bottles, and cork and seal them for sale.

*To Preserve Apricots.*

Take your apricots and pare them, then stone what you can whole; give them a light boiling in a pint of water, or according to your quantity of fruit; then take the weight of your apricots in sugar, and take the liquor which you boil them in and your sugar, and boil it till it comes to a syrup, put in your apricots, and give them a light boiling, taking off the scum as it rises; when the syrup jellies, it is enough; then take up the apricots, and cover them with the jelly, and put them up in bottles; cork and seal them for sale.

*To Preserve Raspberries.*

Choose raspberries that are not too ripe, and take the weight of them in sugar, wet your sugar with a little water, and put in your berries, and let them boil softly; take care not to break them; when they are clear take them up, and boil the syrup till it be thick enough, then put them in again, and when they are cold put them up in glasses, or in bottles corked and sealed.

*To Preserve Cherries, and Currants.*

Take two pounds of cherries, one pound and a half of

of sugar, half a pint of fair water melt some sugar in it; when it is melted put in your other sugar and your cherries, then boil them gently till all the sugar be melted, then boil them fast, and skim them, take them off two or three times and shake them, and put them on again, and let them boil fast; and when they are of a good colour, and the syrup will stand, they are boiled enough; take them off and put them up for sale.

Currants may be preserved in the same way as cherries, only add their weight in sugar; when they are done, put them up in glasses or bottles.

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## TO PRESERVE FRUITS AND VEGETABLES.

*To preserve Bush Beans fresh and good through the winter.*

Take a quantity of beans, of a suitable size and age for eating green, break them, and put into a cask, first sprinkling in salt, then a layer of beans, and so alternately, until the cask is full then add a weak brine so as to cover them: take out for use as you want them, and freshen them twenty-four hours in water, often changing it; boil them three hours, in fresh water.

*To preserve Parsley fresh and green for any length of time.*

Put any quantity of green parsley into a strong

pickle of salt and water boiling hot, cover it up close from the air and keep for use.

*To preserve Cabbages during the winter.*

Dig a hole in the ground, in an oblong position, on the bottom of which lay a covering of straw, on which place your cabbages, heads downward, then lay another covering of straw over them and a board over the straw, over which put all the earth which was dug from out of the hole.

*To Preserve Hazel Nuts in great perfection, for many Months.*

Hazel nuts may be kept a long time in full kernel, by burying them in earthen pots, well closed, a foot or two in the ground. They keep best in gravelly or sandy places.

*Method of keeping Apples.*

It seems not to be generally known that apples may be kept the whole year round by being immersed among grain. If the American apples were packed among grain, they would arrive here (in London) in much finer condition.

*From the London Quarterly Journal.*

*To preserve Apples.*

Dry a glazed jar perfectly, put a few pebbles in the bottom, fill the jar with apples, and cover it with a bit of wood made to fit exactly, and over that put a little fresh mortar. The pebbles arrest the damp of the apples, the mortar draws the air



from the jar, and leaves the apples free from its pressure, which, together with the principle of putrefaction which the air contains, are the causes of decay. Apples kept thus, have been found quite sound, fair, and juicy, in July.

*Simple and singular manner of preserving Apples from the effects of frost, in North America.*

Apples may be produced most abundantly in North America, and forming an article of chief necessity in almost every family, the greatest care is constantly taken to protect them from frost at the earliest commencement of the winter season; it being well known, that apples, if left unprotected, are inevitably destroyed by the first frost which occurs. The desirable object, during their long and severe winters, is said to be completely effected, by only throwing over them a thin linen cloth before the approach of frost, when the fruit beneath is never injured how severe soever the winter may happen to prove. Yet apples are there kept in a small apartment immediately beneath the roof of the house, particularly appropriated to that purpose, and where there is never any fire. This is a fact so well known, that the Americans are astonished it should appear at all wonderful; and they have some reason to be so, when it is considered that throughout Germany, the same method of preserving is universally practiced; from whence probably, it made its way to North America. It appears that linen cloth only, is used for this purpose; woolen cloth, in particu-

lar, having been experienced to prove ineffectual. There seems reason to believe it probable, that even Potatoes might be protected from frost, by some such simple expedients.

*Advantageous method of preserving Apples, Pears, Oranges and Lemons, Potatoes. Turnips. Carrots, Parsnips, &c. in barrels, all the year round.*

In the first place it is necessary to procure good, strong, close barrels, and with an additional quantity of hoops round them, to what the common flour barrels have. If the flour merchants in the country would put their flour in better, closer, and stronger barrels, they would be gainers by it, providing they cost sixpence each more, they would preserve the flour much better, and in the end, they would find it more profitable, and particularly so for flour which is exported abroad, as a large quantity of good flour is partly spoiled for want of being put in better barrels which would preserve it much better both on board of ships, and also afterwards.

The same principle stands good with regard to fruit and vegetables, good, strong, close barrels is necessary, and the method of preserving fruit and vegetables is as follows.

Lay a flooring in the bottom of your barrel, of fine, dry, clean sand, then place a flooring of fruit or vegetables, (first carefully dried and picked, so that there shall be none in but what are sound,) fill up all the crevices with sand, taking care to put plenty at the outside of the fruit, so as to line the inside of

the barrel with sand, and also covering the flooring of fruit, proceed this way until the barrel is full, and on the top of which spread sand so as to fill up all the crevices, and cover the fruit or vegetables ; Then head up the barrel, and plaster up both ends with mortar. Fruit or vegetables so packed up, and housed during the winter, will keep good the whole year round. The sand will protect them from the frost, and will absorb the dampness of the fruit or vegetables, and thus they are preserved entire. This method will be an advantageous one to the grocer, who wishes to make hay while the sun shines, that is, to lay in a sufficient quantity of fruits and vegetables in their proper season, when they can be obtained at the lowest rate, and as there are times when the grocer has leisure hours, those times can be employed in assorting out and drying the fruits and vegetables intended to be packed up for preservation through the winter, which when done, they can stow them away, and bring them out as they want them for use. I have no doubt but there are many families, which, when they come to know that fruits and vegetables can be obtained from the grocers in a good state of preservation, at any time of the year, they would purchase them by the barrel, particularly Potatoes. The grocer would also find, that in the spring time of the year, when fruits and vegetables are in a state of decay, that those which he had packed up according to these directions, would be in a state of high preservation, and would be worth at least fifty per cent more than those kept in the usual way.

*To preserve Potatoes from Frost, a different Way.*

If you have not a convenient store place for them, dig a trench in the earth three or four feet deep, into which they are to be put, and then covered with the same earth which was dug from out of the trench, and raised up in the middle like the roof of a house, and covered with straw, to carry off the rain. They will thus be preserved from the frost, and can be taken up as they are wanted.

N. B. Turnips, Carrots, Beets, and Parsnips, can be preserved in the same way.

*To preserve Oranges and Lemons.*

Take small sand and make it very dry ; after it is cold put a quantity of it into a clean vessel, then take your oranges, and set a laying of them in the same, the stalk end downwards, so that they do not touch each other, and strew in some of the sand, as much as will cover them two inches deep ; then set your vessel in a cold place, and you will find your fruit in high preservation at the end of several months.

This recipe is nearly similar to the one of preserving fruits and vegetables in barrels, excepting that more sand is used, so as to keep the oranges from touching each other ; and this method would be an improvement to the other, in packing them in barrels, for oranges and lemons in particular.

*Method of preserving Grapes.*

Take a cask or barrel, one that is made strong



and close, so that it is inaccessible to the external air, and put into it a layer of bran, dried in an oven, or of ashes well dried and sifted. Upon this place a layer of grapes well cleaned, and gathered in the afternoon of a dry day, before they are perfectly ripe. Proceed thus with alternate layers of bran and grapes, till the barrel is full, taking care that the grapes do not touch each other, and to let the last layer be of bran; then close the barrel, so that the air may not be able to penetrate, which is an essential point. Grapes thus packed, will keep nine or even twelve months. To restore them to their freshness, cut the end of the stalk off each bunch of grapes, and put that of white grapes into white wine, and that of the black grapes into red wine, as you would put flowers into water, to revive or keep them fresh.

*Another method of preserving Apples throughout the year.*

The secret of preserving Apples throughout the year, in a sound state, is of no small importance in this country. The method which has recommended itself to me, by the experience of several years, is as follows :

Gather them about noon, at the full of the moon, in the latter part of September or the beginning of October. Then spread them in a chamber or a garret, where they must lie till about the last of November. Then after selecting out any which were bruised, put the sound ones in barrels or boxes, and mix among them wheat, rye, barley or oats,



so as to fill up all the spaces between, and also cover them both at the top and bottom of the cask. Then head up the casks or boxes, and remove them into a cool part of the cellar ; with this management, I find they will keep good until the first of September, and if they were all sound when put in the casks, not one of them will rot, but let it be remembered, although this method will keep them sound and good all the year round, yet, it cannot prevent those from decaying which were either bruised or beginning to decay, when put into the casks. Therefore it is necessary to be particular to put none in casks but what are sound, for those which were not so, will be a means of turning those to decay, which lie next them in the cask, and this caution is of the utmost importance, in packing up both fruits and vegetables for preservation, in all cases whatever. It would be well for the farmer to pack up his apples in this manner, and if he would take the trouble to plaster up both ends of the cask with mortar, as before recommended, after driving the hoops as tight as possible, it would be a means of excluding the air, and also of drawing out the damp from the apples, they would then be in a good state of preservation, the farmer could send them to market in this state, and he may depend on it, that the extra price they would fetch would pay him well for his trouble. The grocers and others who purchase them in this state, would not need to have any doubts, as to their keeping, and could lay in their stock accordingly.

*Excellent Antiscorbutic Bitters, for the spring of the year.*

Take of the leaves of water cresses, scurvy grass, and brookline, twenty handfuls ; of pine tops, germander, horehound, and the lesser centaury, each sixteen handfuls ; of the roots of briony, and sharp pointed dock, each six pounds ; of mustard seed, one and a half pounds ; infuse the whole in ten gallons of proof spirit for a fortnight, and it will be ready for use.

This will be found the best receipt for bitters, for cleansing and purifying the blood, of any that is in use.

THE END

# APPENDIX.

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## A TREATISE

ON

DISTILLATION, RECTIFICATION, &c.

WITH THE

METHOD OF DISTILLING SIMPLE AND COMPOUND WATERS, RICH CORDIALS, &c.

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## PREFACE.

My principal intention being to render this Treatise useful to all, I have endeavoured to deliver every thing in the plainest and most intelligent manner. Beauty of style is not, indeed, to be expected in a work of this nature; and therefore, if perspicuity be not wanting, I presume the reader will forgive me if he meets with some passages that might have been delivered in a more elegant manner. I have also, for the same reason, avoided, as much as possible, terms of art, and given all the receipts in words at length.

And I flatter myself, if the several hints interspersed through this Treatise are carefully adverted to, Distillation may be carried to a greater degree of perfection than it is at present; and the celebrated Compound Waters and Cordials of the French and Italians, imported at so great an expense, may be made in the United States, equal to those manufactured abroad.

Distillation, though long practised, has not been carried to the degree of perfection that might reasonably have been expected. Nor will this appear surprising if it be considered, that the generality of distillers proceed in the same beaten track, without suspecting their art capable of improvement, or giving themselves any trouble to inquire into the *rationale* of the processes they daily perform. They ima-

gine, that the theory of Distillation is very abstruse, and above the reach of common capacities; or, at least, that it requires a long and very assiduous study to comprehend it; and therefore content themselves with repeating the processes, without the least variation. This opinion, however ridiculous it may appear to those not acquainted with the present practice of distillers, has, I am satisfied, been the principal cause why Distillation has not been carried to the height it would otherwise have been. I have, therefore, endeavoured in the following Treatise to shew the distiller how he may proceed on rational principles, and direct his inquiries in such a manner as cannot fail of leading him to such discoveries in his profession, as will be attended with advantage both to himself and his country.

It is not to those only who make Distillation their profession that I have laboured to render this Treatise useful; I have also endeavoured to extend its utility to those who distil simple and compound waters for their own use, or to distribute to their indigent neighbours. And for this reason I have adapted most of the receipts to small quantities, and briefly enumerated the virtues and uses of each composition.

The short descriptions of the most capital ingredients, and the directions for choosing the best of each kind, I flatter myself, will not be considered as improper; because the goodness of every composition must, in a great measure, depend on the goodness of the ingredients.

The uncommon rapid sale of the first edition of this work, has induced the author to add this addition to the second edition, which, it is hoped, will be also found acceptable to its readers.



A

# COMPLETE SYSTEM OF DISTILLATION.

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## PART I.

### OF THE DISTILLATION OF SPIRITS.

**DISTILLATION** is the art of separating, or drawing off the spirituous, aqueous, and oleaginous parts of a mixed body, from the grosser and more terrestrial parts, by means of fire, and condensing them again by cold.

The object of Distillation is the preparation of spirits. By the distillation of spirits is to be understood the art by which all inflammable spirits, brandies, rums, gins, and the like, are procured from vegetable substances, by the means of a previous fermentation, and a subsequent treatment of the fermented liquor by the alembic, or hot still, with its proper worm and refrigeratory.

We shall, therefore, explain the method of distilling spirits from various substances.

In distilling, there is only one general rule, namely, to let the heat in all cases, be as gentle as possible. A water bath, if sufficiently large, is preferable to any other mode, and will perform the operation with all the despatch requisite for the most extensive business. The spirit as it first comes over, should be received into a quantity of cold water; as by this means, the connection between it and the oily matter will be considerably lessened. For the same reason, after it has been once rectified in the water bath, it should be again mixed with an equal quantity of water, and distilled a second time.

After the spirit has been distilled in this manner from water, it may be distilled in a water bath without any addition; and this last rectification will free it from a greater part of



the water which it may contain. In distilling compound spirits, a small still has been found to answer better than a large one.

But as it is impossible to extract vinious spirits from any vegetable subject, without fermentation, and, previous to this, brewing is often necessary, it will be requisite first to consider these operations.

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## CHAPTER I.

### OF BREWING, IN ORDER TO THE PRODUCTION OF INFLAMMABLE SPIRITS.

By brewing, we mean the extracting a tincture from some vegetable substance, or dissolving it in hot water, by which means it becomes proper for a vinous fermentation.

A solution, or fermentable tincture of this kind, may be procured, with proper management, from any vegetable substance, but the more readily and totally it dissolves in the fluid, the better it is fitted for fermentation, and the larger its produce of spirits. All inspissated vegetable juices therefore, as sugar, honey, treacle, manna, &c. are very proper for this use, as they totally dissolve in water, forming a clear and uniform solution ; but malt, for its cheapness, is generally preferred in England, though it but imperfectly dissolves in hot water. The worst sort is commonly chosen for this purpose ; and the tincture, without the addition of hops, or trouble of boiling it, is directly cooled and fermented.

But in order to brew with malt to the greatest advantage, the three following particulars should be carefully attended to ; First, The subject should be well prepared ; that is, it should be justly malted, and well ground ; for if it be too little malted, it will prove hard and flinty, and consequently only a small part of it dissolve in the water ; and, on the other hand, if too much malted, a great part of the finer particles, or fermentable matter, will be lost in the operation. With regard to grinding, the malt should be reduced to a kind of coarse meal ; for experience has shewn, that by this means the whole substance of the malt may, through the whole process, continue mixed with the tincture, and be distilled with it ; whereby a larger quantity of spirit will be obtained, and also great part of the trouble, time, and ex-

pense in brewing, saved. This secret depends upon thoroughly mixing, or briskly agitating the meal, first in cold water, and then in hot ; and repeating this agitation after the fermentation is finished ; when the thick turbid wash must be immediately committed to the still. And thus the two operations of brewing and fermenting may very commodiously be reduced to one, to the no small profit and advantage of the distiller.

The second particular to be attended to, is, that the water be good, and properly applied. Rain water is the best adapted to brewing ; for it not only extracts the tincture of the malt better than any other, but it also abounds in fermentable parts, whereby the operation is quickened, and the yield of the spirit increased. The next to that of rain, is the water of rivers and lakes, particularly such as wash any large tracts of fertile country, or receive the sullage of populous towns. But whatever water is used, it must stand in a hot state upon the prepared malt, especially if a clear tincture be desired ; but the greatest care must be taken to prevent the malt running into lumps or clods ; and, indeed, the best way to prevent this is to put a small quantity of cold water to the malt first, and mix them well together, after which the remaining quantity of water may be added in a state of boiling, without the least danger of coagulating the malt, or what the distillers call making a pudding.

It has been found by experience, that a certain degree of heat is necessary to extract the whole virtue of the malt : this degree may, by the above method, be determined to the greatest exactness, as the heat of boiling water may at once be lessened to any assigned degree of warmth by a proper addition of cold water ; due regard being had to the season of the year, and the temperature of the air. This improvement, with that mentioned above, of reducing the two operations of brewing and fermentation to one, will be attended with considerable advantage.

With regard to the proper quantity of water, it must be observed, that if too little be used, a viscid clammy mixture will be produced, little disposed to ferment, nor capable of extracting all the soluble parts of the malt. On the other hand, too much water renders the tincture thin and aqueous, and by that means increases the trouble and expense in all parts of the operation. A due medium, therefore, should be chosen ; and experience has shewn, that this will best an-

swer the distiller's purpose. When a proper quantity of water is mixed with the malt, the whole mass must be well agitated, that all the soluble parts of the malt may often come in contact with the aqueous fluid, which being well saturated after standing a proper time, must be drawn off, fresh water poured on, and the agitation repeated, till the whole virtue, or saccharine sweetness of the malt is extracted, and only a fixed husky matter remains, incapable of being dissolved by either hot or cold water.

The third requisite particular is, that some certain additions be used, or alterations made, according to the season of the year, or the intention of the operator. The season of the year is very necessary to be considered. In the summer, the water applied to the malt must be colder than in winter; and in hot sultry weather, the tincture must be suddenly cooled, otherwise it will turn eager; and, in order to check the too great tendency it has to fermentation when the air is hot, it will be necessary to add a proper quantity of unmalted meal, which being much less disposed to fermentation than malt, will greatly moderate its impetuosity, and render the operations suitable to the productions of spirits, which, by a too violent fermentation, would in a great measure be dissipated and lost. For further information on this subject, see page 169.

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## CHAPTER II.

### OF FERMENTATION.

THE tincture, or, as the distillers call it, the wash, being prepared, as in the foregoing chapter, it is next to be fermented; for, without this operation, no vinous spirit can be produced.

By fermentation is meant, that intestine motion performed by the instrumental efficacy of water, whereby the salt, oil, and earth of a fermentable subject are separated, attenuated, transposed, and again collected, and recomposed in a particular manner.

The doctrine of fermentation is of the greatest use, and should be well understood by every distiller, as it is the very basis of the art; and, perhaps, if more attended to, a much purer spirit, as well as a greater quantity of it, might

be procured from the same materials than at present. We shall therefore lay down a concise theory of fermentation, before we proceed to deliver the practice.

Every fermentable subject is composed of salt, oil, and a subtle earth ; but these particles are so small, that, when asunder, they are imperceptible to the senses ; and, therefore, when mixed with an aqueous fluid, they leave it transparent : neither have fermentable bodies any taste, except that of sweetness.

These particles are each composed of salt, oil, and earth, intimately mixed in an actual cohesion, connexion, and union ; and, therefore, when any of those principles too much abounds in any subject, so that an intimate union is prevented, the whole efficacy of the fermentation is either stopped or impaired, or at least limited to one certain species.

This equal connexion of salt, oil, and earth, into a single compound particle, forms a corpuscle soluble in water ; or to speak more philosophically, this compound corpuscle is, by means of its saline particles, connected with the aqueous corpuscles, and moved up and down with them. But where these corpuscles are not thus connected with the water, a number of them join together, and form either a gross, or a loose, chaffy, and spongy matter.

When these compound particles are diluted with a small quantity of an aqueous fluid, they feel slippery, clammy, and unctuous to the touch, and affect the taste with a kind of ropy sweetness. And when a proper quantity of the fluid is added, a commotion is presently excited, and afterwards a subtle separation.

This commotion and separation first begins in the whole substance ; for before the addition of water, the subject may remain in dry, solid, and large pieces, as in malt, sugar, &c. which being reduced to powder, each grain thereof is an agreement of many smaller compound corpuscles : these being put into water, dissolve, and separately float therein, till at length they become so small as to be invisible, and only thicken the consistence of the liquor.

These corpuscles being thus separated from one another, there next ensues a separation of their component particles ; that is, the salt, the oil, and the earth, are divided by the interposition of the aqueous particles.

The first commotion is no more than a bare solution ; for



the saline particles being easily dissolvable in water, they are immediately laid hold of by the aqueous particles, and carried about with them. But the succeeding separation, or fermentative motion, is a very different thing; for by this the saline particles are divided from those of oil and earth, partly by the impulse of the others in their motion, and partly by the force of the aqueous particles, which are now continually meeting and dashing against them.

This motion is performed by the water, as a fluid, or aggregate of an infinite number of particles, in actual and perpetual motion; their smallness being proportionable to that of the fermenting corpuscles, and their motion, or constant susceptibility of motion by warmth, and the motion of the air, disposing them to move other subtle moveable corpuscles also, the certain agreement of figure, or size, between the aqueous particles, and those of the salt in the fermentable subject, tends greatly to increase this commotion; for, by this means, they are readily and very closely connected together, and therefore move almost like one and the same compound corpuscle; whilst the water is not at all disposed to cohere immediately with either the oil or earth. And thus an unequal concussion is excited in the compound corpuscles of the fermentable subject; which concussion at length strikes out the saline particle, loosens the others, and finally produces a separation of the original connexion of the subject.

An aqueous fluid, therefore, is the true, and indeed the only instrument for procuring a fermentable motion in these compound corpuscles of the subject; for were an oily fluid poured upon any fermentable subject, no vinous fermentation would ensue; as the oil could neither give a sufficient impulse on the compound corpuscles, which are grosser than its own constituent particles, nor divide the oily or saline particles of the subject from their connexion with the others, which detain, and, as it were, envelop or defend them from its action.

The compound corpuscles of the fermentable subject being effected by the perpetual motion of the particles of the aqueous fluid, a proper degree motion is necessary, or that the particles move with a proper degree of velocity, which principally depends on external heat. A considerable degree of cold, indeed, will not absolutely prevent fermentation, though it will greatly retard it; and a boiling heat will pre-



vent it still more. A tepid, or middle degree of heat between freezing and boiling, is therefore the most proper for promoting or quickening the operation.

The admission of air, also, though not of absolute necessity, yet greatly promotes and quickens the action, as being a capial instrument in putting in a proper degree of motion, the oily particles of the subject. But whilst the air thus contributes to hasten the effect, it causes at the same time by its activity some remarkable alterations in the oily particles; for it not only moves, but absolutely dissolves and displaces them from their original connexions, and thus carries them off with itself from the whole mass. And, therefore, though the consideration of the air does not so properly belong to fermentation in the general, yet it does in particular, as having an accidental power to alter every species of this operation; consequently its agency ought to be well understood, either to procure alterations at pleasure in the fermenting mass, or to prevent and correct impending dangers.

The oily particles thus separated and dissolved by the air are also elastic, though they probably derive that property from their intercourse with the air itself, and their being rendered extremely minute.

When, therefore, an aqueous fluid is added to a fermentable subject, exposed to a temperate heat, a fermentative struggle immediately arises, the saline part of the compound particles being dissolved by the continual intestine motion of the water, and carried up and down with it in all directions, amidst an infinite number of other particles, as well fermentable as aqueous ones; whence, by this collision and attrition, the saline particles are dissolved, and separated from their connexion with the oily and earthy. And as the oily particles are the most subtle and elastic, they would, by this means, be thrown up to the surface of the liquor, and carried off by the air, were they they not closely connected with the earthy ones, whose gravity prevents their evaporation, and, by coming in contact with others of the same kind, form aggregations, and sink down with the oily particles to the bottom. But before these can form a bulk too large to be supported by the water, many of the oily particles are, by their frequent collisions with the aqueous fluid, separated from the earthy ones, and by degrees more strongly connected again with the saline ones; whilst, on

the other hand, the same saline particles imbibe some of the earthy ones, which being left single, upon their separations from the oily particles, floated about separately in the fluid.

And hence proceed the several different consequences of fermentation ; viz. 1. From the separation of the saline particles of the fermentable subject, proceeds the tart, saline, or acid taste of the liquor ; which is more sensible at first, before the liquor is duly composed and settled, or the due arrangement and connexion of the saline particles with those of the oily and earthy kinds completed ; after which the liquor proves milder, softer, or less pungent. 2. From the oily particles being set at liberty, proceeds the strong smell of the liquor, and the head or shining skin upon the surface. 3. The earthy particles collecting together in clusters, cause the fluid to appear turbid, and afterwards a visible earthy or clay-like matter to be precipitated ; and some of the earthy parts, in their motions, arriving at the head, or oily skin on the surface, cause it to thicken ; and afterwards taking it down along with it, thus constitute the lees which abound in oil. 4. From this new struggle or collision, which is productive both of solution, and a new connexion in the saline and earthy corpuscles, proceeds the ebullition in fermentation. And, lastly, by the same repeated coalition of the oily with the aqueous and saline particles, the inflammable spirit is produced.

Having thus laid down a concise theory of fermentation, we shall now proceed to the practice.

The wash being brought to a tepid or luke-warm state in the backs, a proper quantity of a good-conditioned ferment is added ; but if the ferment be solid, it should be previously broke into small pieces, and gently thinned either with the hand, whisp, &c. in a little of the tepid liquor. A complete and uniform solution, however, should not be attempted, because that would greatly weaken the power of the ferment, or destroy its future efficacy. The whole intended quantity, therefore, being thus loosely mixed with a moderate parcel of the liquor, and kept in a tepid state, either by setting it near the fire or otherwise, and free from the too rude commerce of the external air ; more of the insensibly warm liquor ought to be added, at proper intervals, till at length the whole quantity is properly set to working together. And thus, by dividing the business into parts, it may much more speedily and effectually be performed, than by attempting it all at once.

The whole quantity of liquor being thus set to work, secured in a proper degree of warmth, and defended from a too free intercourse of the external air, nature itself, as it were, finishes the process, and renders the liquor fit for the still.

By ferments, we mean any substance, which, being added to any rightly disposed fermentable liquor, will cause it to ferment much sooner and faster than it would of itself, and, consequently, render the operation shorter; in contradiction to those abusively called so, which only correct some fault in the liquor, or give it some flavour. Hence we see, that the principal use of ferments is to save time, and make despatch in business; whilst they only occasionally, and, as it were by accident, give a flavour, and increase the quantity of spirits. And, accordingly, any fermentable liquor may, without the addition of any ferment, by a proper management of heat alone, be brought to ferment, and even more perfectly, though much slower, than with their assistance.

These ferments are, in general, the flowers and fæces of all fermentable liquors, generated and thrown to the surface, or deposited at the bottom, either during the act of fermentation, or after the operation is finished.

Two of these are procurable in large quantities, and at a small expense; we mean beer yeast and wine- lees; a prudent and artificial management, or use of which, might render the business of distillation much more facile, certain, and advantageous.

It has been esteemed very difficult, and a great discouragement in the business of distillation, to procure a sufficient stock of these materials, and preserve them at all times ready for use. The whole secret consists in dexterously freeing the matter from its superfluous moisture; because, in its fluid state, it is subject to a farther fermentation, which is productive of corruption; in which state it becomes intolerably fœtid and cadaverous.

The method of exposing it to the air till it has acquired a proper consistence, is subject to great inconveniences; and so peculiar and careful a management necessary, that it rarely succeeds.

The best way, therefore, is to press it very slowly and gradually, in a thick, close, and strong canvass bag, after

the manner of wine-lees, by the tail-press, till it becomes a kind of cake, which, though soft, will easily snap, or break dry and brittle between the fingers. Being reduced to that consistence, and closely packed up in a tight cask, it will remain a long time uncorrupted, preserve its fragrancý, and consequently, fit to be used for fermenting the finest liquor.

The same method is also practicable, and to the same advantage, in the flowers or yeast or wine ; which may be thus commodiously imported from abroad : Or, if these cannot be procured, others of equal efficacy may be procured from fresh wine-lees, by barely mixing and stirring them into a proper warm liquor ; whence the lighter, or more volatile and active parts of the lees, will be thrown to the surface, and may easily be taken off, and preserved, by the above-mentioned method, in any desired quantity. And hence, by a very easy process, an inexhaustible supply of the most useful ferments may be readily and successively procured, so as to prevent for the future all occasion of complaint for want of them in the distiller's business.

Experience has demonstrated, that all ferments abound much more in essential oil than the liquor which produced them ; and consequently they retain, in a very high degree, the smell and flavour of the subject. It is therefore requisite, before the ferment is applied, to consider what flavour is intended to be introduced, or what species of ferment is most proper for the liquor.

The alterations thus caused by ferments is so considerable, as to render any neutral fermentable liquor of the same flavour with that which yielded the ferment. This observation is of much greater moment than will presently be conceived ; for a new scene is hereby opened, both in the business of distillation, and others depending on fermentation. It must, however, be observed, that its benefit does not extend to malt, treated in the common method ; nor to any other subject but what affords a spirit tolerably pure and tasteless ; for, otherwise, instead of producing a simple, pure, and uniform flavour, it causes a compound, mixed, and unnatural one. How far the fine stiller may profit by it, well deserves his attention ; and whether our native cyder spirit, crab spirit, &c. which have very little flavour of their own, may not, by this artifice, be brought nearly, if not entirely, into the state of some foreign brandies, so highly esteemed, is recommended to experience.



It is common with distillers, in order to increase the quantity of spirit, give it a particular flavour, or improve its vinosity, to add several things to the liquor during the time it is in a state of fermentation; and these additions may properly be reduced to salts, acids, aromatics, and oils.

All rich vegetable juices, as molasses, honey, &c. which either want a natural acid, have been deprived of it, or contain it in too small a quantity, will be greatly improved by adding, at the beginning of the operation, a small quantity of the vegetable or fine mineral acids; as oil of sulphur, Glauber's spirit of salt, juice of lemons, or an aqueous solution of tartar. These additions will either give, or greatly improve the vinous acidity of the subject, but not increase the quantity of the spirit, that intention being performed by aromatics and oils.

All pungent aromatics have a surprising quality of increasing the quantity of the spirit, as well as in altering or improving the flavour; but their use requires that the fermentation should be performed in close vessels. And if a large quantity be intended to be added, care must be taken not to do it all at once, lest the oiliness of the ingredients should check the operation. But if the flavour be the principal intention, they should not be added till the operation is nearly finished. After the same manner, a very considerable quantity of any essential vegetable oil may be converted into a surprisingly large quantity of inflammable spirit; but great caution is here also necessary not to drop it too fast, or add too large a quantity at a time, which would damp the fermentation: it being the surest method of checking, or totally stopping this operation, at any point of time required. The best method, therefore, of adding the oil, so as to avoid all inconveniences, is to rub the oil in a mortar with sugar, which the chemists call making an *Oleasaccharum*, by which means the tenacity of the oil will be destroyed, and the whole readily mix with the liquor, and immediately ferment with it. The distiller would do well to consider these observations attentively, as he may thence form an advantageous method of increasing the quantity of spirits, and at the same time greatly improve their quality and flavour.

But in order to put these observations in practice, particular regard must be had to the containing vessel in which



the fermentation is performed, the exclusion of the air, and the degree of the external heat or cold.

With regard to the containing vessel; its purity, and the provision for rendering it occasionally close, are chiefly to be considered. In cleansing it, no soap, or other unctuous body should be used, for fear of checking the fermentation; and, for the same reason, all strong alkaline lixiviums should be avoided. Lime-water, or a turbid solution of quicklime may be employed for this purpose, without producing any ill effect: it will also be of great service in destroying a prevailing acetous salt, which is apt to generate in the vessels when the warm air has free access to them; and tends to pervert the order of fermentation, and, instead of a wine or wash, produces a vinegar. Special care must also be had, that no remains of yeast, or cadaverous remains of former fermented matters, hang about the vessels, which would infect whatever should be afterwards put into them, and cannot, without the utmost difficulty, be perfectly cured and sweetened.

The occasional closeness of the vessels may, in the large way, be provided for by covers properly adapted; and, in the small way, by valves, placed in light casks. These valves will occasionally give the necessary vent to preserve the vessel, during the height of the fermentation; the vessel otherwise remaining perfectly close, and impervious to the air.

It is a mistake of a very prejudicial nature, in the business of fermentation, to suppose that there is an absolute necessity for a free admission of the external air. The express contrary is the truth, and very great advantages will be found by practising according to this supposition. A constant influx of the external air, if it does not carry off some part of the spirit already generated, yet certainly catches up and dissipates the fine, subtle, or oleaginous and saline particles whereof the spirit is made, and thus considerably lessens the quantity. By a close fermentation this inconveniency is avoided; all air, except that included in the vessel, being excluded. The whole secret consists in leaving a moderate space for the air at the top of the vessel, unpossessed by the liquor; when the liquor is once fairly at work, to bung it down close, and thus suffer it to finish the fermentation, without opening, or giving it any more vent than that afforded it by a proper valve placed in the cask;

which, however, is not of absolute necessity, when the empty space, or rather that possessed by the air, is about one-tenth of the gage; the artificial air, generated in the operation, being then seldom sufficient to open a strong valve, or at most, not to endanger the cask.

This method may be practised to good advantage by those whose business is not very large; but it requires too much time to be used by the large dealers, who are in a manner forced to admit the free air, and thus sustain a considerable loss in their quantity of spirit, that the fermentation may be finished in the small time allowed for that purpose. It may, however, be said, that the silent, slow, and almost imperceptible vinous fermentation, is universally the most perfect and advantageous.

During the whole course of this operation, the vessel should be kept from all external cold, or considerable heat, in an equal, uniform, and moderate temperature. In the winter, a stove-room, would be very convenient for this purpose, the vessel being placed at a proper distance from the stove; but at other seasons no particular apparatus is necessary, if the place allotted for the business be but well defended from the summer's heat, and the ill effects of cold bleak north-westerly winds.

The operation is known to be perfected when the hissing, or small bubbling noise, can be no longer heard, upon applying the ear to the vessel; and also by the liquor itself appearing clear to the eye, and having a pungent sharpness on the tongue. And that it may fully obtain these properties, and be well fitted to yield a pure and perfectly vinous spirit by distillation, it should be suffered to stand at rest in a somewhat cooler place, if practicable, than that in which it was fermented; till it has thoroughly deposited and cleansed itself of the gross lee, and become perfectly transparent, vinous, and fragrant; in which state it should be committed to the still, and the spirit obtained will not only exceed that obtained in the common way in quantity, but also in fragrance, pungency, and vinosity.

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### CHAPTER III.

#### OF DISTILLATION IN GENERAL.

HAVING, in the two preceding chapters, laid down the

best methods of brewing and fermentation, we shall now proceed to the method of distillation.

And in order to lead our readers methodically through the path which lies before them, we shall begin with explaining the principles of distillation, or, the method of extracting the spirituous parts of bodies.

To extract the spirits is to cause such an action by heat, as to cause them to ascend in vapour from the bodies which detain them.

If this heat be natural to bodies, so that the separation be made without any adventitious means, it is called fermentation, which we have already explained.

If it be produced by fire, or other heating power, in which the alembic is placed, it is called digestion, or distillation: digestion, if the heat only prepares the materials for the distillation of their spirits; and distillation, where the action is of sufficient efficacy to cause them to ascend in vapour, and distil.

This heat is that which puts the insensible parts of a body, whatever it be into motion, divides them, and causes a passage for the spirits enclosed therein, by disengaging them from the phlegm and the earthy particles by which they are enclosed.

Distillation, considered in this light, is not unworthy the attention and countenance of the learned. This art is of infinite extent: whatever the whole earth produces, flowers, fruits, seeds, spices, aromatic and vulnerary plants, odoriferous drugs, &c. are its objects, and come under its cognizance; but we generally confine it to liquids of taste and smell, and to the simple and spirituous waters of aromatic and vulnerary plants. With regard to its utility, we shall omit saying any thing here, as we shall give sufficient proofs of it in the sequel.

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## CHAPTER IV.

### OF PARTICULAR DISTILLATION.

DISTILLATION is generally divided into three kinds; the first is called distillation *per ascensum*, which is when the fire, or other heat, applied to the alembic containing the materials, causes the spirit to ascend. This is the most

common, and indeed almost the only kind used by distillers.

The second is called distillation *per descensum*; which is when the fire, being placed upon the vessel, precipitates, or causes the spirit to descend. This kind is hardly ever used by distillers, but to obtain the essence or oil of cloves.

The third is termed distillation *per latus*, or oblique distillation; but this being used only by the chemists, we shall say nothing farther of it here.

With regard to the different methods of distillation, occasioned by the different vessels or materials made use of to excite heat, improperly called distillation; they are of various kinds, and shall be explained as they occur in the work.

There are various kinds of distillation, some of which arise from the different constructions of alembics; such are the distillation by the common alembic with a refrigeratory, the glass alembic, the serpentine alembic, and the retort: others are produced from the heat surrounding the alembic; such as the distillation in *Balneum Mariæ*, the vapour, the sand, the dung, and the lime baths.

These different methods of distilling, we shall explain in enumerating the operations in which they are most proper; and proceed to treat of the different forms of alembics and their constructions.

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## CHAPTER V.

### OF ALEMBICS, AND THEIR DIFFERENT CONSTRUCTIONS.

THE alembic is a vessel, usually of copper tinned, which serves for, and is essential to all operations in the distillery.

There are several sorts of alembics, all different, either with regard to matter or form: As, the common alembic with a refrigeratory, the earthen and the glass alembic, the *Balneum Mariæ*, and the vapour-bath alembic.

Every one of these being of a different construction, are also used in different operations.

The common alembic consists principally of two parts, the lower part called the body, and the upper termed the head.

The body consists of two pieces, the lower called the cu-

curbit, and the upper the crown. The cucurbit, or lower part of the body, is a kind of receptacle proportioned to the size of the alembic, in which the bodies to be distilled are placed.

The crown, or upper part of the body, is also another part of the alembic; and is that part of the body to which the head is immediately luted. But an idea of these several alembics will be much better attained from the following figures, which represent them much stronger to the imagination than is possible to be done by words.

*Fig. 1.* Is a common alembic, as it appears before it is placed in a furnace, where *a* is the bottom, *b* the crown, *c* the head.

*Fig. 2.* Is the body without the head; *a* the rim or top of the crown where the head is luted.

*Fig. 3.* The head; *a* the rim where it is to be luted to the body; *b* the nose, or end which is luted into the worm.

*Fig. 4.* The worm, as it appears when out of the tub, in which it is fixed when in use; *a* the end into which the still-head is inserted, *b* that which conveys the liquor into the receiver.

*Fig. 5.* Two stills at work in one refrigeratory; *a b* the two still heads, *c d* the bodies enclosed in the brick work, *e e* the two fire-places; *f f* the two ash-holes; *g* a common receiver, *h* a spout-receiver, called by chemists a separating-glass, used in the distillation of herbs in order to extract their essential oil; a crane for drawing the water out of the refrigeratory.

*Fig. 6.* A small still with a refrigeratory; *a* the body, *b* the head, *c* the refrigeratory filled with water, *d* the receiver, luted to the bec of the alembic.

*Fig. 7.* A glass alembic to be used as a *Balneum Mariæ*; *a* the body, *b* the head, *c* the bec, which is to be luted to the receiver, *d* a trivet on which it is standing in the water.

*Fig. 8.* A proper receiver for the glass alembic, called by the chemists a bolt-head, or matrass.

*Fig. 9.* The glass alembic placed in a copper vessel; *a* the copper vessel filled with water, *b* the body of the glass alembic, *c* the head, *d* the receiver luted at *e* to the bec of the alembic.

*Fig. 10.* A cold still for distilling simple waters; *a* the head, *b* the bec or nose, *c* the receiver, *d* the plate on which herbs are laid.



*Fig. 11.* A vessel for digestion, called by chemists a pelican or circulatory vessel; *a* the body, *b* the head, *c c* two tubes, luted at *d d*, by which the liquor returns from the head into the body.

*Fig. 12.* Another receiver used when it is necessary to lute it to the end of the worm, in order to prevent the most volatile parts from being evaporated and lost.

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## CHAPTER VI.

### OF THE ACCIDENTS THAT TOO OFTEN HAPPEN IN PERFORMING THE PROCESSES OF DISTILLATION.

Among the accidents which frequently happen in distilling, the least of all is for the operation to miscarry, and the ingredients to be lost.

And this being a subject of the greatest importance, we shall treat it with all possible accuracy.

All accidents are occasioned by fire, their primary cause; by want of attention they get too much head, and fear often suffers them to become irremediable.

The first accident which may happen by the fire, is when a distiller, by too great a heat, causes the ingredients to be burnt at the bottom of the still; by this means his liquor is spoiled by an empyreumatic taste, and the tin is melted off from the alembic. An empyreuma resembles the smell of burnt tobacco, and is produced in liquors by too great a degree of heat. To illustrate this, distil any fruit, flowers, or any aromatic whatever, but especially something whose smell is very volatile; draw off only the best, unlute the alembic, and what remains in the still will be found to have a very disagreeable smell; whence it follows, that if a little more had been drawn off, it would have spoiled what was before obtained.

If the fire be too violent, the extraordinary ebullition of the contents causes them to ascend into the head; and, if a glass alembic, they fall ignited into the recipient; the heat breaks it, the spirits are dissipated, and often take fire from the heat of the furnace.

If the fire be too strong, the bottom of the still becomes red-hot, the materials inflamed, and consequently the fire reaches the recipient.

When an earthen alembic is used, the closest attention is requisite to keep the fire from burning the materials at the bottom. The head, which is always of glass, bursts, and the spirits are spilt, and often catch fire. And the remedy becomes the more difficult, as earth retains the fire much longer than a common alembic.

If the alembic be not firmly fixed, it is soon put out of order, falls down, and unlutes itself; thus the liquor is spilt, and the vapour sets the spirits on fire.

If all the joints be not carefully luted, the spirits at their first effort issue through the least aperture, run into the fire, which is propagated into the alembic by the vapour.

In distillations where the phlegm ascends first, its humidity penetrates the lute, and loosens it; so that when the spirituous vapours ascend, they are exposed to the same accident.

Lastly, when the recipient is unluted, especially if near full, without the greatest circumspection the spirits will be spilt, and so catch fire.

Hitherto I have only given a simple account of what daily happens to distillers; but the consequences of these accidents are infinitely more terrible than the accidents themselves: For an artist to lose his time, his labour, and goods, is no small matter; but it follows from what we have premised, that both his life and fortune are in danger from these conflagrations. Instances of the former are too common, as well as those of the latter, relating to the danger to which the operator is exposed. They are evident, and we have seen very lately three instances sufficient to intimidate the most sanguine. The spirits catch, the alembic and recipient fly, and the inflamed vapour becomes present death to all who breathe it.

The rectifiers, who perform the most dangerous operations of distillery, are particularly exposed to these terrible accidents: the fineness of the spirit, at the same time that it renders it more inflammable, also causes the fire to spread with the greater rapidity. And when their store-houses are once on fire, they are seldom or never saved.

Possibly I may be censured for my conciseness on this head; indeed, the importance of it requires the most particular discussion; but intending to speak of the methods proper to prevent these accidents, I shall close this chapter with recommending the subject of it to the serious reflection

of all concerned in distillation. And it being hitherto omitted, though of all others it requires the attention of the distiller, I shall further observe, that these operations should never be left to servants. What can be expected from ignorant persons? Fear will seize them, when the greatest presence of mind is requisite.—Let us now proceed to the methods of preventing, or at least lessening their effects.

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## CHAPTER VII.

### OF THE METHODS OF PREVENTING ACCIDENTS.

To have informed the reader of the accidents which happen in distilling, would have been of little consequence, without shewing, at the same time, the methods of preventing them. In order therefore to fortify him against the terror which the foregoing chapter may have excited, we will here point out the remedies for all the cases before specified.

To prevent accidents, two things especially must be known, and adverted to:—

1. The knowledge of the fire, which depends on the fuel, whether wood or coal.
2. The manner of luting so as to prevent the vapour from escaping through it, and by that means of setting the whole on fire.

The hardest wood generally makes the quickest fire, such as beech, oak, holme, elm, &c. The white woods, as the ash, the poplar, the willow, and the birch, make a milder fire. This holds good also of the coal made of these two kinds of wood; and, consequently, the nature of the wood or coal must determine the fire, and the action of this must be proportioned to the effect intended to be produced by it: That is, the capacity of the alembic, the matters to be distilled, and their quantity. The same may also be said of pit coal, which is generally used in England.

It is evident, that the larger the alembic, the more fire is necessary. What has not been digested, also, requires more fire than that which has been prepared by that operation. Spices require a stronger fire than flowers; a distillation of simple water, more than that of spirituous liquors.

The surest way of ascertaining the necessary degree of fire is to regulate it by the materials, as they are more or

less disposed to yield them spirits, &c. and this is done as follows. The operator must not leave the alembic, but attentively listen to what passes within, when the fire begins to heat it. When ebullition becomes too vehement, the fire must be lessened, either by taking out some of the fuel, or covering it with ashes or sand.

It requires a long experience in the several cases, before a distiller can acquire a competent knowledge in this important point. Nor is it possible to determine the degree of fire from the quantity of fuel; judgment, assisted by experience, must supply this defect.

Every thing being determined with regard to the degree of fire, we shall now proceed to explain the method of luting alembics.

By the term luting an alembic, we mean, the closing the joints through which the spirits might transpire.

Lute is a composition of common ashes, well sifted, and soaked in water; clay, and a kind of paste made of meal or starch, are also used for this purpose; which, as I before observed, is to close all the joints, &c. in order to confine the spirits from transpiring.

Good luting is one of the surest methods of preventing accidents; an alembic, where all transpiration is prevented, having nothing to fear but the too great fierceness of the fire; and that may be regulated by the rule already laid down.

The refrigerating alembic is mostly used. The body and the head are joined to each other; but notwithstanding the greatest care be taken in luting the juncture, there will still be some inperceptible interstice for transpiration; and the least being of the greatest consequence, a piece of strong paper should be pasted over the joint, and the alembic never left, till the spirits begin to flow into the receiver, in order to apply fresh paper if the former should contract any moisture. The master himself should carefully attend to this, and whatever precaution may have been previously used, the eye must be constantly upon it.

The alembic, when vinous spirits are distilled, should be luted with clay, carefully spread round the junctures, in order to prevent all transpiration; because the consequences here are terrible; for when the fire catches a large quantity, it is often irremediable. Besides, as this earth cracks in drying, it must be often moistened, and fresh applied, on the first appearance of any occasion for it.

The retort is also luted with clay; but as glass retorts are also used, they are often coated with the same clay, to prevent their melting by the intenseness of the fire.

Lastly, the earthen and glass alembics are luted with paper and paste as above.—Having thus explained the great consequence of circumspection with regard to luting, and the degree of fire, we shall proceed to a third method of preventing them, and close this chapter with a short observation on portable furnaces; which is, that alembics being never thoroughly secure on this kind of furnaces, a hook should be fastened to the refrigerent for fixing it to the wall.

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## CHAPTER VIII.

### OF THE REMEDIES FOR ACCIDENTS, WHEN THEY HAPPEN.

NOTWITHSTANDING the best of rules, and the strictest observation, it is impossible entirely to prevent accidents; and, therefore, it is of no less importance to point out the remedies on those occasions.

The most essential are, courage and presence of mind; fear only increasing the misfortune.

1. If the fire be too violent, it must be covered: but not so as totally to prevent its action, as by that means the process of the distillation would be interrupted, and render it more difficult and less perfect.

2. When the ingredients burn, which you will soon discover by the smell, the fire must be immediately put out, in order to prevent the whole charge of the still being entirely spoiled, which would otherwise inevitably be the consequence.

3. If the spirits should catch fire, the first care is to unlute immediately the receiver, and stop both the end of the beak and mouth of the receiver with wet cloths.

The fire must then be put out; and if the flames issued through the luting, the joints must be closed with a wet cloth, which, together with water, should never be wanting in a distil-house.

4. If the alembic be of earth, and the contents burn at the bottom, the fire must immediately be put out, the alembic removed, and water thrown upon it, till the danger is over; and, for farther security, covered with a wet cloth.



5. If, after all your care in closing the junctures to prevent transpiration, you perceive any thing amiss while the spirits are ascending, apply clay, or any other composition, in order to stop the aperture, and have always a wet cloth ready to stifle the flame, if the spirits should take fire.

6. If the heat detaches the lute, or it becomes moist, immediately apply another, having always ready what is necessary for performing it. Should the transpiration be so violent that you cannot immediately apply a fresh lute, clap a wet cloth round the joint, and keep it on firm and tight, till the spirits have taken their course. But if, notwithstanding all your efforts, the transpiration should increase, so that you fear a conflagration, remove the receiver as soon as possible from the fire, and afterwards your alembic, if portable ; but if otherwise, put out the fire immediately.

7. The charge being worked off, be cautious in luting the receiver, that nothing be spilt on the furnace, and carry it to some distance from it, that the spirits exhaling may not take fire.

8. Lastly, observe, that wherever a remedy is required, there must be no candle used ; for the spirituous vapour easily take fire, and propagate the flame to the vessel from whence they issue.

All that has been hitherto said, concerns only the management of the alembic ; but what remains is still more interesting, and relates to those who work it, that they may not, by conquering the accident, destroy themselves.

On discovering any of the above accidents, when the flame has not yet reached the spirits, let the remedies already mentioned be applied, either with regard to the lute, or the violence of the fire.

But if the flame has reached the alembic, the following precautions are to be used.

The operator must not approach the alembic without a wet cloth over his mouth and nostrils, it being immediate death to inhale the inflamed vapour.

In hastening to stop any accident, be careful to approach the side opposite to that whither the air impels the flame ; for, without this precaution, you would be involved in it, and could not, without the utmost difficulty, extricate yourself from it.

If, notwithstanding this precaution, the eddy of the air

should force the flame to your side, quit the place immediately, and do not return till its direction be changed, always taking care to have a wet linen cloth before your nose and mouth, and keep yourself on the side opposite to the direction of the flame ; and also to have another such cloth, in order to smother the flame, and close the crevice through which the spirits issue.

Should it be your misfortune to be covered with inflamed spirits, wrap yourself in a wet sheet, which should be always ready for that purpose. Self-preservation is of too great importance that any of these precautions should be omitted in such variety of dangers.

If the fire has acquired such a head that it cannot be stopt, the receiver must be broke, and the alembic, if portable, thrown down ; but no person must be suffered to go near them, especially those who are strangers to the business.

In a desperate case, like that of a large quantity of rectified spirit taking fire, if time permit, the communication of the beak of the alembic with the recipient, which is usually a cask, must be cut off, by closely stopping the bung ; and be sure no candle come near the receiver, leaving the rest, as the danger would be too great to expose one's self to the flames of a large charge, and the distiller's safety should be principally considered.

I thought it my duty to give my reader these informations, and hope that, in the practice of distillation, he will find them of great advantage.

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## CHAPTER IX.

### ON THE NECESSITY OF OFTEN COOLING THE ALEMBIC, AS ANOTHER MEANS OF PREVENTING ACCIDENTS.

THE refrigerant is so essential a part of the alembic, that for want of it several other expedients are made use of to perform its office, for cooling those whose capacity, brittleness, or lastly the construction, will not admit of their having any.

The refrigerant is usually in proportion to the capacity of the alembic, for which the following may serve as a rule, that the capacity of the refrigerant should be to that of the alembic, as 14 to 8.

The necessity of cooling the head of the alembic, is self-evident to all who have the least knowledge of distillation, as it condenses the spirits, cools them, and causes them to flow into the receiver, which, if of glass, would otherwise be broken by the heat ; and consequently serves to prevent conflagrations.

The alembics of the *Balneum Mariæ*, and the vapour bath, ought also to have refrigerants, like the common alembic, unless they are of glass.

Those of earth and glass are cooled, as we have already observed, with a wet cloth, which is also used to cool the head of other kinds of alembics. But it is not difficult to contrive one which may be placed in a refrigerant ; such as the following :—

To a common small still apply and lute a worm, or long tin or pewter tube, forming several circumvolutions, of the same circumference with the body ; in order to give it some elevation, place this worm in a refrigerant, proportioned to the alembic. If the capacity of this alembic should make it bear too much on the neck of the matrass, it may be supported by a trivet of the same circumference as the body itself : the extremity of the worm may have a beak projecting beyond the side of the refrigerant, for conveying the spirits into the receiver.

This apparatus will be attended with little expense, will save the distiller the trouble of being perpetually cooling the head of the alembic, and is such a safeguard against accidents, that if the worm be well luted, nothing need be apprehended but from the violence of the fire.

This method of practice, therefore, is productive of three valuable particulars : the first is, That by cooling the spirits it preserves the receiver, and obviates the accidents arising from their heat. The second is, That the spirits being kept in a moderate heat, the transpiration is less, and consequently the spirits procured by the operation have more taste, smell, and fragrancy, than they would otherwise have had.

Experience demonstrates, that when the spirits flow hot into the receiver, however attentive the distiller may be to lute the junctures of the alembic, there will be a very sensible evaporation, which, even in simple waters, greatly depreciates the goodness of the liquor.

Lastly, the third is, That the cooling of alembics is what

principally contributes to the perfection of the operation ; because the coolness of the head precipitates the phlegm, and in the case of too great a degree of fire, and where the ebullition is too vehement, if after taking away part of the fire, or covering it, the ebullition should continue, the head may be cooled with a wet cloth, till the ebullition is reduced.

As there is a necessity of cooling the alembic, so what we have said cannot be too carefully observed. In fine, the contrast of cold and heat, equally concurring, but by method directly opposite, to the same process, and the perfection of the distillation, is a phenomenon which deserves the attention of all who study the operations of nature.

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## CHAPTER X.

### OF THE NECESSITY OF PUTTING WATER INTO THE ALEMBIC, FOR SEVERAL DISTILLATIONS.

Two principal advantages attend putting water into the alembic. The *first* is, to prevent the loss the distiller would incur without that precaution, and so prevent any alteration in the liquor procured by distillation. This we shall illustrate by an example. Suppose a distiller should attempt to rectify spirits of wine, without putting water in the alembic, it is evident that the fire will consume part of it, which is entirely loss, because the same quantity of spirit cannot be procured from it, which might, had there been any thing to moderate the action of the fire which now preyed upon it.

*Secondly*, If liquors are impregnated with strong ingredients, especially seeds, and the quantity be sufficient to absorb all the phlegm, a great quantity of spirits must be left in the still, or the ingredients will burn, and the spirits contract an empyreumatic taste, which is the more detrimental to the spirits, as it is increased by age.

*Thirdly*, If no water be put into the alembic with the ingredients, the spirits will be rendered finer by them, and the fire, if ever so little too strong, will cause the ingredients to burn, and the spirits contract an empyreuma ; a misfortune easily prevented by this precaution.

Thus, it is a safeguard against accidents ; but besides, water being mixed with the ingredients, they are at once



prevented from burning, and the spirit not weakened ; for no sooner are the ingredients put in motion by the fire, than the spirits immediately ascend, and the liquor loses nothing of its quality, provided the receiver be removed as soon as the phlegm begins to ascend.

The water therefore prevents the waste of the spirits, and thus the distiller loses nothing of his goods ; whereas, without water, the spirits, by impregnating the materials, their quantity must be less. With regard to the phlegm, there is no difficulty in finding when it begins to ascend, the first drop being cloudy, and when it has continued dropping for some time, it is perceived by a milky cast at the bottom of the receiver.

*Lastly,* The distiller is no loser with regard to the quality of his liquor, which is not at all weakened thereby. Thus it is attended with two capital advantages, the profit of the distiller, and the perfection of the liquor. Let us now proceed to the different manners of distillation.

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## CHAPTER XI.

### OF THE PARTICULAR ADVANTAGES ATTENDING EVERY KIND OF DISTILLATION.

IN the third chapter we mentioned the several kinds of distillation ; we shall here enlarge on the particular advantages of each, and in what circumstances each is to be used.

In order for distillation, the alembic must be charged with materials, and placed on a fire, or substances capable of producing the same effect.

### THE METHOD OF DISTILLING WITH THE COMMON REFRIGERANT ALEMBIC.

This method of distilling is the most generally used, being one of the most speedy and profitable, as it requires fewer preparatives, and less time.

To distil with the common alembic, the body of it must be thoroughly cleansed, that no taste or smell of any preceding materials may remain. The materials are then to be put into the alembic ; but care must be taken that the alembic be not above half full, in order that the materials



may have sufficient room to move, without choaking the neck of the alembic. The same care must be taken with regard to the head, it must be thoroughly cleansed and dried; for it often happens that some small quantity of water is left in the rim, which renders the first spirits foul, and, by endeavouring to separate it from the other, some, and that the most volatile part of the spirit, will be lost.

When the still is charged, let the fire under it be lighted; and whilst it burns up, the two parts of the alembic are to be carefully luted with strong brown paper, well pasted on, and the nose of the alembic luted to the worm.

By laying the hand on the still and capital, as the fire gains strength, the process of the operation will be ascertained, for, wherever the head, or capital, feels hot, it is a proof that the whole particles have arisen, and are about to enter the worm. When the still head is about to become hot, prepare a damp, made of the ashes under the grate, mixed with as much water as will properly wet them. This mixture is to be thrown upon the fire, to moderate its action, at the instant when distillation has commenced. Continue the heat as long as the distilled liquor is spirituous to the taste.

When the distilled liquor carries with it any particular flavour, it should be re-distilled with essential oils, in order to convert it into a compound spirit, as gin, peppermint, and other cordials.

When all the spirituous fluid is drawn off, the still should be emptied by a cock in the side. The head, &c. should then be removed, and the several lutes taken clean off. The still may now be charged a second time and luted. If the spirits or compound to be made, is of a different nature or flavour from that procured by the last distillation, the still, capital, and worm should be thoroughly cleansed by hot water, sand and a scrubbing-brush, to remove the oily particles which adhere to their internal surfaces. The worm is best cleansed by passing hot water through it repeatedly, until the water flows out quite flavourless.

Great care should be taken that no grease, tallow, soap, or any other unctuous matter, fall into the tubs.—Above all things, lighted candles, or torches should not be brought near any vessel containing spirits. The flue or chimney should be kept constantly clean.

This alembic being worked on an open fire, the operation

is quicker than any other ; but the degree of fire requires a very close attention, as a different management is necessary to different materials. The water of the refrigeratory must be changed from time to time, and if the case requires it, the whole head, but especially the bec, must be kept cold.

#### OF DISTILLATION IN SAND, AND IN WHAT CASES IT SHOULD BE USED.

This species of distillation is performed in two different manners. First, by covering the fire with sand or ashes, and placing the alembic upon it. This method is very necessary in digestion, and for the perfect rectification of spirits. Sand is absolutely necessary for moderating the action of the fire, when there is reason to fear the matter contained in the bottom of the alembic will burn.

The second method of sand distillation is, to take the finest river sand, and after thoroughly washing it, put into the alembic a quantity sufficient to cover it three fingers deep; after which the still is to be charged with the ingredients to be distilled. This serves instead of water in certain cases, where the use of it would prejudice the ingredients; as in the fine spirituous waters impregnated with the aromatic parts of flowers; the sand preventing the ingredients from burning. It is also necessary in distilling rectified spirits from seeds.

This operation being finished, the alembic must be thoroughly cleansed from the sand, that the taste or smell contained therein, be not communicated to any other charge of different ingredients.

#### OF DISTILLING IN BALNEUM MARLÆ, AND ITS ADVANTAGES.

This method of distillation is of great use in several cases. Its operation is more perfect, and is subject to few, if any, of those accidents attending distillations on an open fire.

In distilling sweet-scented waters from flowers, aromatic plants, and others of that kind, where neither water nor spirit ought to be mixed with them, there is an absolute necessity for using the *Balneum Mariæ*; as by every other distillation, on an open fire, the ingredients would infallibly burn.

If sand should be made use of, the fire would melt the tin from the alembic, and the contents be in the utmost danger of being burnt.

In distilling in *Balneum Mariæ*, a glass alembic is generally used. This alembic is to be placed in a copper vessel filled with water. This vessel ought at least to be of half the height of the alembic: at the bottom of the copper vessel must be a trivet on which the alembic is to be placed, that it may not touch the bottom of the copper, because, when the water begins to boil, it disperses itself towards the sides, and leaving the bottom dry, the ingredients would be in danger of burning.

The use of the *Balneum Mariæ* is excellent for those ingredients which require little spirit; but if a copper alembic be used, be sure to place sand at the bottom, that these distilled liquor may not contract any ill taste or smell. This method is also advisable in the rectification of spirits, on account of the danger attending this operation when performed on a naked fire.

Were this method of distillation as expeditious as that performed on a naked fire, no other ought to be used, because it is subject to no accidents, and at the same time the spirit, &c. distilled, is much more fragrant and grateful.

#### IN WHAT CASES GLASS OR EARTHEN ALEMBICS ARE TO BE USED; THEIR ADVANTAGES AND DISADVANTAGES.

IN the chapter relating to accidents, we have mentioned the earthen alembic; we must now and, that it ought never to be used, except the matter to be distilled have a strong and bad smell, and then seldom above once, unless it be for ingredients of the same or similar qualities.

This alembic being very difficult to be managed, we can only recommend it in the case above-mentioned.

As a naked fire is generally applied to this alembic, it requires a furnace where the fire may be gradually increased, on account of the accidents to which it is liable.

The glass alembic is more easily managed, as it is generally placed in a *Balneum Mariæ*. Its principal use is for distilling waters from flowers, and making quintessences; and were it not for the length of the operation, it would be preferable to any other method.

This alembic hardly admitting of a refrigerant, a wet linen cloth must be placed on the head, and often changed.

The receiver of this alembic must not be very large, because of the fragility of the bec; but if it were ever so little bent into a curve, the largeness of the receiver would be of no prejudice; because then its whole weight would be supported by its stand.

#### ADVANTGES OF DISTILLATION PERFORMED BY THE VAPOUR BATH.

This method differs very little from the *Balneum Mariæ*, and is used nearly in the same circumstances; but has greatly the advantage of the *Balneum Mariæ* in the quickness of the operation. And LEMERY, in the first part of his course of chemistry, affirms its operation to be more perfect.

However that be, its use is equal to that of the *Balneum Mariæ*; but in distilling sweet-scented waters, or flowers, sand must be placed at the bottom, that the liquor may not contract a taste from the copper.

#### CASES WHERE DUNG, HUSKS OF GRAPES, AND LIME, ARE TO BE USED.

These substances are rarely used except in digestions; and therefore of no great use to distillers, they using only hot ashes, or a fire well covered for that purpose.

If dung be used, it must be of the hottest kind, viz. that of the horse or sheep, and the quantity proportioned to the heat intended. The lime must be quick; and if the heat required be moderate, lime which has lain some time in the air must be used. The same is to be observed with regard to the husks of grapes. But in whatever manner these are used, the digestion must be performed in a close covered vessel.

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## CHAPTER XII.

### OF BODIES PROPER FOR DISTILLATION.

THIS chapter alone might make a volume, were we to make a particular enumeration of all its parts; but, as we have already observed, we shall confine ourselves to the distillation of simple and compound waters, &c.

If we acquit ourselves to the satisfaction of the public,



we shall enjoy the pleasure of having treated one of part entirely new ; and, indeed, the only one that has been overlooked.

The bodies proper for distillation, are flowers, fruits, seeds, spices, and aromatic plants.

By distillation and digestion, we extract the colour and smell of flowers in simple waters and essences.

We extract from fruits, at least from some, colour, taste, &c.

From aromatic plants, the distiller draws spirits, essences, simple and compound waters.

From spices are procured essences, or in the language of the chemists, oils, and perfumes, and also pure spirits.

From seeds or berries are drawn simple waters, pure spirits ; and from some, as those of annise, fennel, and juniper oil.

The colour of flowers is extracted by infusion, and likewise by digestion in brandy or spirit of wine : the smell is extracted by distillation ; the simple water with brandy or spirit of wine.

What is extracted of the colour of flowers, by infusion in water, by a gentle heat, or by digestion in brandy or spirits of wine, is called, in the distiller's phrase, tincture of flowers.

The colour of fruits is extracted in the same manner, either by infusion or digestion : their taste is also procured by the same processes. But let it be observed, that the time of these operations must be limited ; for otherwise the fruit, after fermentation, would render it acid. The taste is also extracted by distillation in spirit of wine.

From aromatic plants are extracted, by the alembic, pure spirits, odours, and simple waters. But these require different methods of distillation. The first by water or brandy only, the second by rectified spirit, which will give them the greatest excellency they are capable of.

The plants themselves with their flowers may also be distilled which is still better.

From spices are drawn spirits, and oily or spirituous quintessences. The spirits are drawn by brandy, or spirit of wine, with very little water ; the oils are distilled *per descensum* ; and the spirituous quintessences by pounding the spices, and, after infusing them in spirit of wine, decanting it gently by inclination.



From seeds are extracted simple waters, spirits, and oils: very few of the first and last, spirits being what is generally extracted from seeds and berries.

Some distillers, through a notion of frugality, distil seeds with water; but their liquors are not to be compared with those which are distilled with spirits. When oils are drawn from seeds, the operation is performed either by the *Bal-neum Mariæ*, or the vapour bath.

We only deliver in this place the first elements of each of these operations, which will be further illustrated in the sequel, we treat more particularly of these subjects.

## CHAPTER XIII.

### OF WHAT IS PROCURED BY DISTILLATION.

By distillation are procured spirit, essence, simple waters, and phlegm.

Spirits are very difficult to be defined. I consider them as the most subtle and volatile parts of a body.

All bodies, without exception, have spirits more or less.

These parts are an ignited substance, and consequently by their own nature disposed to a violent motion.

These volatile particles are more or less disposed to separate themselves, as the bodies are more or less porous, or abound with a greater or lesser quantity of oil.

By the term *essence*, we understand the oleaginous parts of a body. An essential oil is found in all bodies, being one of their constituent principles. I have observed in all my distillations, spirit of wine excepted, a soft unctuous substance floating on the phlegm; and this substance is oil, which we call essence; and this is what we endeavour to extract.

Simple waters are those distilled from plants, flowers, &c. without the help of water, brandy, or spirits of wine. These waters are commonly odoriferous, containing the odour of the body from whence it is extracted, and even exceeds in smell the body itself.

Phlegm is the aqueous particles of bodies; but whether an active or passive principle, we shall leave to the decision of chemists.

It is of the last importance to a distiller to be well ac-

quainted with its nature ; many mistaking for phlegm several white and clouded drops, which first fall into the receiver when the still begins to work. These, however, are often the most spirituous particles of the matter in the alembic, and consequently ought to be preserved. What has given occasion to this mistake, is some humidity remaining in the head, &c. of the alembic. And had it been thoroughly wiped, the first drops would have been equally bright with any during the whole operation.

The following remark deserves attention. In bodies that have been digested, the spirits ascend first ; whereas in charges not digested, the phlegm ascends before the spirits. The reason of this is very plain and natural.

In substances previously digested, the action of the fire no sooner causes the matter in the alembic to boil, than the spirits, being the most volatile parts, detach themselves, and ascend into the head of the alembic. But when the matter to be distilled has not undergone a proper digestion, the spirits, being entangled in the phlegm, are less disposed to ascend, till the phlegm itself separates, and gives them room to fly upwards. The phlegm being aqueous rises first ; this is more particularly observable in spices. I am, however, inclined to believe, that were the operation performed in an alembic, whose head was at a great distance from the surface of the charge, they would not ascend high enough to come over the helm, but fall back again by their own gravity, and by that means leave the spirits at liberty to ascend. But in the common refrigeratory alembic this always happens.

If this observation be not readily admitted, I appeal to experience, which I desire may be the test of every thing I shall advance.

Another observation, which has verified the above assertion by innumerable instances, is, that in an extraordinary run of business, when I had not time sufficient to digest the substances, I used to bruise them in a mortar ; but notwithstanding the trituration, the phlegm first came over, and afterwards the spirits. But I desire to be understood, that I speak here only of the volatile parts of the plants not drawn with vinous spirits, but contained in a simple water.

Another remark I must add, and which I hope will be acceptable to the curious, as it has not yet been made public, though doubtless the observation has often occurred to oth-

ers: it is this; that in mixed charges, consisting of flowers, fruits, and aromatic plants, put into the alembic without a previous digestion, the spirits of the flowers ascend first; and, notwithstanding the mixture, they contract nothing of the smell or taste of the fruits and plants. Next after the spirits of the flowers, those of the fruits ascend, not in the least impregnated with the smell or taste of either the flowers or plants. And in the last place, the spirits of the plants distil no less neat than the former. Should this appear strange to any one, experience will convince him of the truth.

Another observation I have made on aromatic herbs, is, that whether they are, or are not digested; whether the spirits or phlegm ascend first; the spirits contain very little of the taste and smell of the plants from whence they were extracted: and I have always been obliged to put to these spirits a greater or lesser quantity of the phlegm, in order to give the spirits I had drawn the taste of an aromatic odour of the plants; the phlegm containing the greatest quantity of both.

This observation I insert, as of great use to those who practice distillation.

As the term *digestion* often occurs in this essay, I cannot avoid pointing out its advantages, and shewing the necessity of using it in several circumstances.

Substances are said to be in digestion, when they are infused in a menstruum, over a very slow fire. This preparation is often necessary in distillation; for it tends to open the bodies, and thereby free the spirits from their confinements, whereby they are better enabled to ascend.

Cold digestions are the best; those made by fire, or in hot materials, diminish the quality of the goods, as some part, as the most volatile, will be lost.

In order to procure essences, the bodies must be prepared by digestion. It is even of absolute necessity for extracting the spirits and essences of spices.

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## CHAPTER XIV.

### OF THE PROPER SEASON FOR DISTILLING.

FLOWERS of all kinds must be distilled in their proper seasons. To begin with the violet. Its colour and smell

can only be extracted when it is in its greatest vigour, which is not at its first appearance, nor when it begins to decay. *April* is the month in which it is in its greatest perfection; the season being never so forward in *March*, as to give the violet its whole fragrancy.

The same must be observed of all other flowers. And let them be gathered at the hottest time of the day; the odour and fragrancy of flowers being then in their greatest perfection.

The same observation holds good with regard to fruits; to which must be added, that they are the finest, and of the most beautiful colour, especially those from whence tinctures are drawn; they must be free from all defects, as the goods would by that means be greatly detrimented.

Berries and aromatics may be distilled at any season, all that is necessary being a good choice. But in this distillers are sometimes mistaken, as may easily happen without a very accurate knowledge. We shall therefore, in the sequel, lay down more particular directions for making a proper choice of materials.

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## CHAPTER XV.

### OF THE FILTRATION OF LIQUORS.

FILTRATION consists in passing liquors through some porous substance, in order to free them from those particles which obscure their brightness.

Nothing is finer than a liquor newly distilled; but the syrup and colouring particles render it thick and opaque: in order, therefore to restore their brightness, they are filtrated, which is done by passing them through sand, paper, cloth, &c.

All the attention of the distiller cannot, in ordinary operations, always prevent some aqueous particles from rising with the spirits, either in the beginning of the process, in those compositions where they ascend first, or at the conclusion when they rise last. As this is almost unavoidable, so it is also sometimes necessary.

In distilling flowers, or aromatic plants, fresh gathered, the phlegm rises first; and this part cannot be taken out of



the receiver, without depriving the spirits of a considerable part of their fragrancy.

In distilling spices, their odour being more entangled, will remain in the alembic till part of the phlegm is drawn off. But when, instead of these substances, their quintessences are used, the necessity ceases. But the phlegm commonly causing a cloudiness in the liquor, it may be rendered tolerably fine by pouring it gently off by inclination, without the trouble of filtration; the aqueous particles, by their gravity, falling to the bottom. But to render it entirely bright and fine, put some cotton in a funnel, and pour the liquor through it, by which means the aqueous particles will be retained in the cotton. You must, however, remember to cover the top of the funnel, to prevent the most volatile parts of the spirits from evaporating.

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## CHAPTER XVI.

### OF THE DISTILLATION OF MALT SPIRITS.

THE wash, or liquor, being prepared by brewing and fermentation, as directed in the first and second chapters of this Treatise, the still is to be charged with it, and worked off with a pretty brisk fire. But it should be observed, that the only apparatus used in this process, is the alembic, with the refrigeratory, as represented in *Fig. 1*.

The wash being of a mucilaginous nature, a particular management is necessary to prevent its burning, and cause it to work kindly in the still: if it should happen to be burnt in the operation, the spirit will have a most disagreeable flavour, which can hardly ever be removed; and therefore, to prevent this ill effect, the wash should be made dilute or thin, the fire well regulated, and the whole kept in a continual agitation during the whole process. The most judicious distillers always take care to have their wash sufficiently diluted, and constantly find their spirit the purer for it. With regard to the fire, it may be easily kept regular, by a constant attendance, and observing never to stir it hastily, or throw on fresh fuel; and the stirring of the liquor in the still is to be effected by means of a paddle or bar kept in the liquor, till it just begins to boil, which is the time for luting on the head; and after which there is no



great danger but from the improper management of the fire. This is the common way ; but it is no easy matter to hit the exact time, and the doing it either too late or too soon, is attended with great inconvenience, so that several have discovered other methods : some put more solid bodies into the still with the wash ; others place some proper matter at the bottom and sides of the still, which are the places where the fire acts with the greatest force.

The use of the paddle would, however, answer better than either of these methods, could it be continued during the whole time the still is working ; and this may be done by the following method : let a short tube of iron or copper be soldered in the centre of the still-head, and let a cross-bar be placed below in the same head, with a hole in the middle, corresponding to that at the top ; through both these let an iron pipe be carried down into the still, and let an iron rod be passed through this with wooden sweeps at its end : this rod may be continually worked by a winch at the still head, and the sweeps will continually keep the bottom and sides scraped clean, the interstices of the tube being all the time well crammed with tow to prevent any evaporation of the spirit

The same effect may, in a great measure, be produced by a less laborious method ; namely, by placing a parcel of cylindrical sticks lengthways, so as to cover the whole bottom of the still, or by throwing in a loose parcel of faggot-sticks at a venture ; for the action of the fire below moving the liquor, at the same time gives motion to the sticks, making them act continually like a parcel of stirrers upon the bottom and sides of the still, which might, if necessary, be furnished with buttons and loops to prevent them from starting. Some also use a parcel of fine hay laid upon the loose sticks, and secured down by two cross poles, laid from side to side, and in the same manner fastened down with loops. Care is to be taken, in this case, not to press the hay against the sides of the still ; for that would scorch nearly as soon as the wash itself ; but the sticks never will : these are simple but effectual contrivances, and, in point of elegance, they may be improved at pleasure.

There is another inconvenience attending the distilling of malt spirit, which is, when all the bottoms, or gross mealy feculence, is put into the still along with the liquor, the thinner part of the wash going off in form of spirit, the mealy

mass grows by degrees more and more stiff, so as to scorch towards the latter part of the operation. The best method of remedying this, is to have a pipe with a stop-cock, leading from the upper part of the worm-tub into the still; so that upon a half, or a quarter turn, it may continually supply a little stream of hot water, in the same proportion as the spirit runs off, by which means the danger of scorching is avoided, and the operation, at the same time, not in the least retarded.

In Holland, the malt distillers work all their wash thick, with the whole body of meal among it; yet they are so careful in keeping their stills clean, and so regular and nice in the management of their fires, that though they use no artifice at all on this head, only to charge the still while it is hot and moist, they very rarely have the misfortune to scorch, except now and then in the depth of winter. When such an accident has once happened in a still, they are extremely careful to scrape, scrub, and scour off the remains of the burnt matter, otherwise they find the same accident very liable to happen again in the same place. But beyond all the other methods in use on this occasion, would be the working the stills not by a dry heat, but in a *Balneum Mariæ*, which might possibly be so contrived by the basin being large, and capable of working a great many stills at once, as to be extremely worth the proprietor's while in all respects.

Another requisite to be observed is, that the water in the worm-tub be kept cool: this may be effected, by placing in the middle of the tub a wooden pipe or gutter, about three inches square within, reaching from the top almost to the bottom; by this contrivance cold water may, as often as necessary, be conveyed to the bottom of the worm-tub, and the hot water at the top forced either over the sides of the tub, or, which is better, through a leaden pipe of moderate size, called a waste-pipe, soldered into the top of the tub, and extended to the gutter formed to carry away the water.

## CHAPTER XVII.

## OF THE DISTILLATION OF MOLASSES SPIRITS.

[See pages 222, and 252.]

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## CHAPTER XVIII.

## OF THE NATURE OF BRANDIES, AND METHOD OF DISTILLING THEM IN FRANCE.

THE general method of distilling brandies in France need not be formally described, as it differs in nothing from that commonly practised here in working from wash or molasses; nor are they in the least more cleanly or exact in the operation.

They only observe more particularly to throw a little of the natural lee into the still, along with the wine, as finding this gives their spirit the flavour for which it is generally admired abroad.

But though brandy is extracted from wine, experience tells us, that there is a great difference in grapes from which the wine is made. Every soil, every climate, every kind of grapes, varies with regard to the quantity and quality of spirits extracted from them. There are some grapes which are only fit for eating; others for drying; as those of Damascus, Corinth, Provence, and Avignon; but not fit to make wine.

Some wines are very proper for distillation, others much less so. The wines of Languedoc and Provence afford a great deal of brandy by distillation, when the operation is made in their full strength; the Orleans wines, and those of Blois afford yet more; but the best are those of the territories of Cogniac and of Andaye, which are however in the number of those the least drank in France. Whereas those of Burgundy and of Champaign, though of a very fine flavour, are improper, because they yield but very little in distillation.

It must also be further observed, that all the wines for distillation, as those of Spain, the Canaries, of Alicant, of Cyprus, of St. Peres, of Toquet, of Grave, of Hungary,

and others of the same kind, yield very little brandy by distillation; and consequently would cost the distiller considerably more than he could sell it for. What is drawn from them is indeed very good, always retaining the saccharine quality and rich flavour of the wine from whence it is drawn; but as it grows old, this flavour often grows aromatic, and is not agreeable to all palates.

Hence we see, that brandies always differ, according as they are extracted from different species of grapes. Nor would there be so great a similarity as there is between the different kinds of French brandies, were the strongest wines used for this purpose: but this is rarely the case, the weakest and lowest flavoured wines only are distilled for their spirit, or such as prove absolutely unfit for any other use.

A large quantity of brandies is distilled in France, during the time of the vintage; for all those poor grapes that prove unfit for wine, are usually first gathered, pressed, their juice fermented, and directly distilled. This rids their hands of their poor wines at once, and leaves their casks empty for the reception of better. This large stock of small wines, with which they are almost overrun in France, sufficiently accounts for their making such vast quantities of brandy in France, more than other countries which lie in warmer climates, and are much better adapted to the production of grapes.

Nor is this the only fund of their brandies; for all the wine that turns eager, is also condemned to the still; and, in short, all that they can neither export nor consume at home, which amounts to a large quantity; since much of the wine laid in for their family provision is so poor, as not to keep during the time in spending.

Hence, many of our English spirits, with proper management, are convertible into brandies, that shall hardly be distinguished from the foreign in many respects, provided this operation be neatly performed. And, in particular, how far a cider spirit, and a crab spirit, may, even from the first extraction, be made to resemble the fine and thin brandies of France.

[See also page 209.]



## CHAPTER XIX.

## OF THE DISTILLATION OF RUM.

[See page 247.]

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## CHAPTER XX.

## OF SUGAR SPIRIT.

WE mean by a sugar spirit, that extracted from the washings, scummings, dross, and waste of a sugar-baker's refining-house.

These recrementitious or drossy parts of the sugar, are to be diluted with water, fermented in the same manner as molasses or wash, and then distilled in the common method. And if the operation be carefully performed, and the spirit well rectified, it may be mixed with foreign brandies, to great advantage; for this spirit will be found superior to that extracted from treacle, and consequently more proper for these uses.

[See also page 252.]

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## CHAPTER XXI.

## OF RAISIN SPIRITS.

By raisins spirits we understand, that extracted from raisins after a proper fermentation.

In order to extract this spirit, the raisins must be infused in a proper quantity of water, and fermented in the manner described in the chapter on fermentation. When the fermentation is completed, the whole is to be thrown into the still, and the spirit extracted by a strong fire.

The reason why we here direct a strong fire is, because by that means a greater quantity of the essential oil will come over the helm with the spirits, which will render it much fitter for the distiller's purpose: for this spirit is generally used to mix with common malt goods; and it is surprising how far it will go in this respect, ten gallons of it being often suf-



ficient to give a determining flavour and agreeable vinosity to a whole piece of malt spirits.

It is therefore well worth the distiller's while to endeavour at improving the common method of extracting spirits from raisins; and perhaps the following hint may merit attention:—

When the fermentation is completed, and the still charged with fermented liquor, as above directed, let the whole be drawn off with as brisk a fire as possible; but instead of the cask or can generally used by our English distillers for a receiver, let a large glass, called by chemists a *separating glass*, be placed under the nose of the worm, and a common receiver applied to the spout of the separating glass: by this means the essential oil will swim upon the top of the spirit, or rather low-wine, in the separating glass, and may be easily preserved at the end of the operation.

The use of this limpid essential oil is well known to distillers; for in this resides the whole flavour, and consequently may be used to the greatest advantage in giving that distinguishing taste, and true vinosity, to the common malt spirits.

After the oil is separated from the low-wine, the liquor may be rectified in *Balneum Mariæ* into a pure and almost tasteless spirit, and therefore well adapted to make the finest compound cordials, or to imitate or mix with the finest French brandies, arracs, &c.

In the same manner a spirit may be obtained from cider. But as its particular flavour is not so desirable as that obtained from raisins, it should be distilled in a more gentle manner and carefully rectified in the manner we shall shew in the chapter on rectification: by which means a very pure and almost insipid spirit will be obtained, which may be used to very great advantage in imitating the best brandies of France, or in making the finest compound waters or cordials.

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## CHAPTER XXII.

### OF RECTIFICATION.

RECTIFICATION is a reiterated depuration of a distilled matter, brandy, spirits, or oils, by distilling over again to render them more subtle, and exalt their virtues.

It is remarkable that no one method of combinatory rec-

tification, that is of the rectification performed by means of salts, and other additions, is suitable to all the several kinds of spirits; scarcely will any one way serve for any two spirits; but this method by simple and careful distillation, is equally to all. All spirits are improved by it, and all of them are then known to be perfectly rectified, when in the state of alcohol, they not only prove totally inflammable in a little vessel floating upon cold waters, but when poured into the purest spring water, they have not the least power of making any change; nor of leaving any marks of oiliness in it

Fixed salts are rectified by calcination, dissolution, or filtration.

Metals are rectified, i. e. refined by the coppel, and reguluses by repeated fusions, &c.

In a word, all rectifications are founded upon the same principles; and consists in separating substances more volatile, from substances less volatile; and the general method of effecting this, is, to apply only the degree of heat which is necessary to cause this separation.

There are many different methods of performing this operation; though some, and indeed those in general practised by our distillers, hardly deserve the name; because, instead of rectifying, that is, freeing the spirit from its essential oil and phlegm, they alter the natural flavour of the spirit that comes over in the operation.

The principal business of rectification is to separate the spirit from the essential of the ingredient, which is very apt to adhere strongly to the spirit. And in order to this, care should be taken in the first distillation; that is, the spirit, especially that from malt or rye should be drawn by a gentle fire, by which means a great part of the essential oil will be kept from mixing with the spirit; for experience has abundantly proved, that it is much easier to keep asunder, than to separate them when once mixed.

But as it is almost impossible to draw low-wines without the spirit being in some measure impregnated with the essential oil, it is absolutely necessary to be acquainted with some methods of separating the spirit from the oil, and also of freeing it from its phlegm. The best methods of doing this to perfection, are redistillation and percolation.

In order to rectify low-wines, they should be put into a tall body or alembic, and gently distilled in *Balneum Mariæ*;

by this means a large proportion both of the oil and phlegm will remain in the body. But if the spirit should be found, after this operation, to contain some of the essential oil, it must be let down with fair water, and redistilled in the same gentle manner. And thus it may be brought to any degree of purity; especially if, in the working, the spirit be suffered to fall into a proper quantity of *Balneum Mariæ*. But it must be remembered, that it is much more difficult to cleanse alcohol, or proof spirit, than low-wines, because the oil is more intimately mixed with the two former than with the latter. This oil may however, be separated from proof spirit, &c. by the method already proposed, especially if it be previously filtrated through paper, thick flannel, sand, stone, &c.

But this method, though it effectually answers the intention, is generally rejected by our distillers, because of the slowness of the operation, and others substituted in its stead; though instead of freeing the spirit from the oil, they only abolish the natural flavour of the spirit, and make a more intimate mixture between the particles of the spirit, and those of the essential oil.

It is impossible to enumerate all the different methods practised by distillers, as almost every one pretends to have a secret nostrum for this purpose. The principal methods in use for rectifying malt spirits, (and which we presume would answer for rye whiskey) are however reducible to three; viz. by fixed alkaline salts, by acid spirits mixed with alkaline salts, and by saline bodies, and flavouring additions.

The method of rectifying by alkaline salts is thus performed:—To every piece of proofspirit add fourteen pounds of dry salt of tartar, fixed nitre, or calcined tartar; lute on the head and distil by a gentle heat, but be very careful to leave out the faints.

By this method a large proportion of the foetid oil will be left in the still; and what comes over with the spirit will be greatly attenuated. But this operation is generally performed in a different manner; for, instead of distilling the spirit in a gentle and equable manner, the still is worked in its full force; by which means the oil, which should have remained in the still, is driven over, and intimately mixed with the spirit; and consequently, the whole operation frustrated, and the spirit rendered much harder to cleanse than it was before.

But even when the operation is performed according to the rules of art, it is far from being perfect; for it is well known, that part of the fixed salts become volatile in the operation, pass over the helm, and intimately mix with the essential oil still contained in the spirits: by this means the oil becomes more perfectly united with the spirits, and consequently much harder to be separated by repeated distillations. Nor is this all, for the still being worked in its full force, the bitter oil of the malt, formed into a kind of liquid soap in the still by means of the alkaline salt, is brought over the helm with the faints, and suffered to mix with the spirit, whereby it is rendered almost as nauseous and ill tasted as before the operation. Besides, if this operation were performed in its utmost perfection, it would never answer the intention; for the alkaline salt destroys the vinosity of the spirit; and consequently deprives it of one of its most valuable properties. Our distillers are well acquainted with this defect in the operation, and endeavour to supply it by an addition of acids. This is what we call the second method, by alkalies and acids.

The operation of rectifying by the method of fixed alkalies and acids, is the same as that above described; the spirit is drawn over from fixed alkalies as before; but in order to mortify the alkali in the spirit, and restore its vinosity, a proper quantity of some acid spirit is added. Various kinds of acids are used on this occasion; but principally those of the mineral kind, because of their cheapness; as oil of vitriol, spirit of nitre, oil of sulphur, and the like. We would, however, caution a young distiller from being too busy with these corrosive acids; the sulphurous spirit of vitriol, dulcified spirit of nitre, or Mr. Boyle's acid spirit of wine well rectified will much better answer his purpose.

The third method of rectification is that by saline bodies, and flavouring ingredients. There is no difference in the operation between this and the two foregoing methods: fixed alkaline salts, common salt decrepitated or dried, calcined vitriol, sandiver, alum, &c. is put into the still with the low-wines, and the spirit drawn over as before. When the quantity is drawn off, the flavouring ingredients are added to give the spirit the flavour intended. But as the spirit is not by this means rendered sufficiently pure, the disagreeable flavour of the spirit generally overpowers that of the



ingredients, whereby the whole intention is either destroyed, or a compound flavour produced, very different from that intended.

Some distillers, instead of alkaline salts, use quick-lime in rectifying their malt spirit: this ingredient cleanses and dephlegmates the spirit considerably; but like that rectified from alkaline salts, it acquires an alkaline disposition, and also a nidorous flavour. Acids, therefore, are as necessary to be mixed with those spirits rectified with quick-lime, as with those rectified with an alkaline salt. If chalk, calcined and well purified animal bones, &c. were used instead of quick-lime, the spirit would have a much less alkaline or nidorous flavour; and, consequently, the flavouring ingredients might be added to it with more success than can be expected from a spirit rectified from alkaline salts.

But, perhaps, if neutral salts were used instead of the alkaline ones, the spirit might be rendered pure, without contracting an alkaline flavour; soluble tartar might be used for this purpose, though the spirit acquires from hence a little saponaceous flavour. Dr. Cox has mentioned another method for this purpose, viz. to deprive the volatile salts of their oil, by rendering them neutral with spirit of salt, and afterwards subliming them with salt of tartar; the acid may be varied if the spirit of salt should not be found so well adapted to the purpose as could be wished: but fine dry sugar seems the best adapted to the purpose of rectifying these spirits; as it readily unites with the essential oil, detains and fixes it without imparting any urinous, alkaline, or other nauseous flavour to the spirits rectified upon it.

Another method of rectifying with dry fixed alkaline salts; and which is said to be practised by the French.—Which is, to procure two tubs, one to be put inside the other, the outer tub large and spacious, the inner tub a narrow one, and about three inches shorter in height than the outer one; in this inner tub are put the dry alkaline salts, the outer tub is filled with spirit, but so as not to run over into the inner tub, a cover is then put over both the tubs, which must cover them as close as possible, and in this state the spirit is left for about ten days; during which time a gas proceeds from the dry salts, which mixes with the spirit, extracts the essential oil, and renders the spirit pure.

Thus have I considered the principal methods used by our distillers in rectifying their spirits; and shall conclude



this chapter with remarking, that there is no other way of rectifying to perfection, besides what we first laid down, viz. by gentle distillation. But then it must be remembered, that the whole process must be of a piece: we mean, that the first distillation from the wash must be performed in a gentle manner; for otherwise the essential oil will be so intimately blended with the spirit, as not to be easily separated by redistillation. Another good property attending this method is its universality; all kinds of spirits, from whatever ingredients extracted, require rectification; and this is adapted to all kinds.

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## CHAPTER XXIII.

### *Of the Rectification of Spirits into Alcohol.*

ALCOHOL is in all cases, the product of fermentable matter; and is formed by the successive process of vinous fermentation, and distillation. All fermented liquors, therefore, agree in these two points; the one, that a saccharine juice has been necessary to their production; and the other, that they are capable of furnishing an ardent spirit by distillation.

Alcohol, as well as ardent spirits of different kinds, is procured most largely in this country, from a fermented grain liquor, prepared for the express purpose of distillation from grain; but, in the wine countries, the spirit is obtained from the distillation of wine; hence the synonymous term,—spirit of wine.

In the distillation of alcohol, the object is to separate as much as possible the water, with which it is diluted in the form of spirit. This may be effected either by repeated distillation, or by the use of pot-ash, or dry muriate of lime, which has the property of keeping the aqueous portion, while the alcohol rises. For conducting the process on a large scale, the common still is used; but for small experiment the common retort and receiver may be employed.

The most practical means for this purpose, seems to be repeated distillations from water into water; when the essential oil will at once be left upon two surfaces, and the acid imbibed. But the shorter ways are those by rectifying from neutral absorbent salts, and earths, such as chalk,

sugar, and the like. And lastly the use of fixed alkalies may be tried; for these very forcibly keep down both the phlegm and oil, insomuch that this last method, promises to be the shortest of all.

Rectifiers are fixed alkalies, lime, alum, burnt charcoal, chalk, &c. but they must be all calcined, and very dry, and powdered. Soap is also used in considerable quantities. But if instead of the common mode of rectifying with hot stills, they would try the use of a large *Balneum Mariæ*, made of a rectangular boiler; and a set of tall conical vessels, they will find that little fire, and little attendance, and consequently very little expense, will in this manner furnish them with spirit reduced to this standard, and greatly superior to others, in this case there would be no occasion for any addition of salts, but the distiller may work more perfectly and more expeditiously without them, and thus preserve the fine essential vinosity of the spirit, which in the common way of working they commonly lose.

The advantage of this method would be yet greater to the apothecary, and the makers of compound cordials, who want only a pure spirit, and suffer greatly in the fineness and perfection of their commodities, by the spirit they are obliged to use, having in it a nauseous oil of its own which will always mix itself with their compositions.

To complete the purification, or free the spirits from their remaining phlegm or oil, or the watery vapour which is raised even by the gentlest heat, in which they can be distilled, a little fixed alkaline salt, thoroughly dried and powdered, or lime, or some other article of a like kind, is added, which imbibing the phlegm, is thereby dissolved into a ponderous liquid that does not mingle with the spirit but settles at the bottom. If the spirit is very phlegmatic, four pints will require a pound of the alkali. If the distillation has been performed with due care, half this quantity or less will be sufficient, in either case, if all the salt dissolves, the spirit is to be digested with a little more, till at last a part remains undissolved. The spirit when poured off, is to be again distilled, in order to separate from it a portion of the salt which has united with it, and which, though extremely minute, may in some respects change its quality. As some particles of the alkali are apt to be carried up with it, when in the distillation, so as to communicate an ill flavour, or an urinous taste, it is advisable to add a small

proportion of calcined vitriol or burnt alum, and charcoal, which will completely absorb the alkali without giving any new impregnation to the spirit. Malt spirits, or whiskey when properly rectified, yield as pure, and as strong rectified spirit as brandy.

When only a small quantity of spirit of wine is to be rectified, the usual operation for this purpose, is by means of distillation of the spirit called *aqua vitæ*, obtained from the first distillation of liquor that has undergone the spirituous fermentation, and which is over charged with a large quantity of phlegm and light oil, is difficult to purify.

These distillations being slowly conducted, with a gentle fire and water bath, yield but a small quantity of that liquor, which being the most volatile, rises first with the least heat, and which is the true, or rectified spirit of wine.

Several chemists, in order to obtain a larger quantity of the first spirit, propose to mix with the spirit, some intermediate substances, to absorb and retain its phlegm, and oil; such as dried and calcined salts, very dry chalk, charcoal, &c.

Kunkel proposes to separate more effectually the oil, by adding to the spirit a large quantity of water, and by distilling this dilute spirit, with a very gentle heat, but the trouble and inconvenience of depriving the spirit of wine of the water with which it was diluted in this process, may be avoided by rectifying at once a large quantity of *aqua vitæ*, i. e. common whiskey.

Nothing more is required to obtain at once a considerable quantity of pure spirit of wine, than to set aside the twelve or fifteen pints first drawn over, from a large quantity. By thus keeping apart portions of the spirit obtained at different times in this way, we may have spirit of wine, or alcohol of the different degrees of strength and purity.

The weaker spirit may, by another distillation be again rectified, and the spirit of moderate strength may be preserved for use. This method is followed by Mr. Beaum, in the rectification, and is certainly the most convenient, and the best.

Boerheaves' method of rectification is, to fill a still half full of *aqua vitæ*, and add to it half a pound of perfectly dry and decipitated sea salt, put this in quite hot, then place on the head, and lute the joints; leave this for twelve hours in a heat so small as not to boil the spirit, then distill off two thirds, which receive in a dry glass vessel, then draw off

the remainder, and keep this by itself. There will remain in the still, a moist salt which has attracted the aqueous matter of the alcohol, and held it so down that it could not rise by the heat of the boiling water which is all that must be used in this distillation.

The salt having first been decipitated, never makes any change in the alcohol, by adding anything to it. By this means an alcohol is prepared perfectly pure, and fit for all the uses of chemistry.

Henry's method of preparing alcohol is, to a quantity of spirit contained in a glass vessel, the sub-carbonate of potash, perfectly dry, is to be added; the mixture to be well shaken; the clear liquor to be decanted; and this is to be repeated as long as the alkali is moistened by the spirit. When enough has been employed, the next addition will fall to the bottom in a perfectly dry state.

The dry muriate of lime may be advantageously used as a substitute for alkali. The clear liquid is next to be distilled by the heat of a water-bath; and the result is pure alcohol.

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## CHAPTER XXIV.

### *Of Faints, and the uses they may be applied to.*

IN many of the receipts I have ordered the receiver to be removed as soon as the faints begin to rise; because otherwise the goods would contract a disagreeable taste and smell. It is not, however, to be understood that these faints are to be thrown away, nor the working of the still immediately stopped; for they are far from being of no value, notwithstanding, they would be of great disadvantage if suffered to run among the more spirituous parts of the goods before drawn off. As soon, therefore, as you find the clear colour of the goods begins to change of a bluish or whitish colour, remove the receiver, place another under the nose of the worm, and continue the distillation as long as the liquor running from the worm is spirituous, which may be known by pouring a little of it on the still head, and applying a lighted candle to it; for if it is spirituous it will burn, but otherwise not. When the faints will no longer burn on the still-head, put out the fire, and pour the faints in a cask for



that purpose; and when, from repeated distillations, you have procured a sufficient quantity of these faints, let the still be charged with them almost to the top. Then throw into the still three or four pounds of salt, and draw off as you would any other charge, as long as the spirit extracted is of a sufficient strength; after which the receiver is to be removed, and the faints saved by themselves as before.

The spirits thus extracted from the faints will serve in several compositions as well as fresh; but they are generally used in anniseed water, because the predominant taste of the aniseeds will entirely cover that they had before acquired from other ingredients.

## PART II.

### CONTAINING THE METHOD OF DISTILLING SIMPLE WATERS.

#### CHAPTER I.

THE instruments chiefly used in the distillation of simple waters are of two kinds, commonly called the hot still, or alembic, and the cold still; the former is represented in *Fig. 5.* and the latter in *Fig. 10.*

The waters drawn by the cold still from odoriferous plants, are much more fragrant, and more fully impregnated with their virtues, than those drawn by the hot still or alembic: but the operation is much more slow and tedious by the former than the latter, so that very few care to comply with it; and therefore a method has been invented to avoid the tediousness of the one, and the inconvenience of the other. The method is this:

A pewter body is suspended in the body of the alembic, and the head of the still fitted to the pewter body; into this body the ingredients to be distilled are put, the alembic filled with water, the still-head luted to the pewter body, and the nose luted into the worm of the refrigeratory or worm.

The same intention will be answered by putting the ingredients into a glass alembic, and placing it in a bath heat, or *Balneum Mariæ*, as we have before directed, Chap. XI.



By either of these means, the ingredients have greater heat given them than in the cold still; and yet, by the interposition of the water in which the vessel containing them is placed, they are not so forcibly acted upon by the fire, as in the common way of the hot still. So that all those things which require a middle way between the other; that is, those simples which are of a texture between very volatile and very fixed, are treated very properly by this method; but neither the very odoriferous simples, nor those whose parts are very heavy and fixed, can be treated this way but to disadvantage.

One of the greatest advantages of this contrivance is, that waters so drawn come over much cooler than from the hot still; that is, they have not so much of the fire in them, as the distillers term it; so that a hot spicy water, thus ordered, will taste as cool on the palate when just drawn, as it would when drawn by the hot still after it had acquired a considerable age.

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## CHAPTER II.

### OF WATERS DRAWN BY THE COLD STILL.

The cold still is much the best adapted to draw off the virtues of simples, which are valued for their fine flavour when green, which is subject to be lost in drying. For when we want to extract from plants a spirit so light and volatile, as not to subsist in open air any longer than while the plant continues in its growth, it is certainly the best method to remove the plant from its native soil, in some proper instrument, where, as it dries, these volatile parts can be collected and preserved. And such an instrument is what we call the cold still, where the drying of the plant or flower is only forwarded by a moderate warmth, and all that rises is collected and preserved.

As the method of performing the operation by the cold still is the very same, whatever plant or flower is used, the following instance of procuring a water from rosemary, will be abundantly sufficient to instruct the young practitioner in the manner of conducting the process in all cases whatever.

Take rosemary, fresh gathered, in its perfection, with the

morning dew upon it, and lay it lightly and unbruised upon the plate, or bottom of the still. Cover the plate with its conical head and apply a glass receiver to the nose of it. Make a small fire of charcoal under the plate, continuing it as long as any liquour comes over into the receiver. When nothing more comes over, take off the still-head, and remove the plant, putting fresh in its stead, and proceed as before: continue to repeat the operation successively, till a sufficient quantity of water is procured. Let this distilled water be kept at rest, in clean bottles close stopped, for some days in a cold place; by this means it will become limped and powerfully impregnated with the taste and smell of the plant.

In this water are contained the liquor of dew, consisting of its own proper parts, which are not without difficulty separated from the plant, and cleave to it even in the drying. This dew, also, by sticking to the outside, receives the liquid parts of the plant, which being elaborated the day before and exhaled in the night, are hereby detained, so that they concrete together into one external liquid, which is often viscid, as appears in manna, honey, &c. This water also contains the fluid which exhales from the vessels of the rosemary, and which principally consists of simple water, as appears upon long standing in an open vessel, when the taste and odour vanishing, leave an insipid water behind. Another part of this water is that subtile volatile substance, which gives the plant its peculiar taste and odour: for this the senses discover in it; but what remains after the process is finished, scarce afford any thing thereof. The same water seems also to contain seeds, or other little bodies; which in a certain time usually grows into a kind of thin, whitish weed, suspended in the middle of the water; and daily increasing or spreading itself, becomes a mucilage which did not appear at first.

I have kept these waters undisturbed in separate well closed vessels, and observed, that in a year's time they began to appear thick, which thickness gradually increased every year, till at length the liquor grew ropy and mucilaginous. Hence we see, that this water contains the elementary water, and presiding spirit of the plant; a spirit small in bulk, but rich in virtues, and exhibiting the specific smell and taste of the subject. This water, therefore, in exhaling, proves a vehicle to that spirit, which contains in a small,

subtile, extremely volatile, and thence easily separable substance, the particular virtue of the plant, leaving the remainder exhausted in this respect; and hence proceeds the medicinal virtues of these waters, which principally depend, upon their native spirit. For this spirit, in most plants having a brisk mobility, affects the nerves, and raises the spirits in case of their depression.

If the vessel be close stopped, and set in a cool place, the waters drawn by the cold still will retain their virtues for a year; but if negligently kept, or any crack should happen in the glass, their extremely volatile spirit secretly flies off, and leaves the water vapid.

Hence we learn what it is that plants lose by being dried in the summer time; namely, the water and spirit we have been describing. Hence we also know the nature of that fluid, which first rises from plants in distillation, and what that matter properly is in plants, that gives their peculiar odour; that is, their presiding spirit. Lastly, we hence learn, in some measure at least, what those *effluvia* are, which principally in the summer season, and in the open air, exhale from vegetables; for it is highly probable, that these constant exhalations of plants, especially in the day-time, have a near agreement in their peculiar nature with the liquor extracted by the cold still; though differing in this, that the exhalation made from the parts is continually recruited by the root; whilst, by our operation, those parts alone are collected, which are driven off from the plant after being gathered, and no longer supplied with fresh nourishment.

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### CHAPTER III.

#### *Of the Distilling Simple Waters by the Alembic.*

The plants designed for this operation are to be gathered when their leaves are at full growth, and a little before the flowers appear, or, at least before the seed comes on; because the virtue of the simple expected in these waters is often little, after the seed or fruit is formed at which time plants begin to languish: the morning is best to gather them in, because the volatile parts are then condensed by the coldness of the night, and kept in by the tenacity of the dew, not yet exhaled by the sun.

This is to be understood, when the virtue of the distilled water resides principally in the leaves of plants ; as it does in mint, marjorum, penny-royal, rue and many more ; but the case differs when the aromatic virtue is only found in the flowers, as in roses, lilies of the valley, &c. in which case we choose their flowery parts, whilst they smell the sweetest, and gather them before they are quite opened, or begin to shed, the morning dews still hanging on them.

In other plants the seeds are to be preferred, as in annise, caraway, cumin, &c. where the herb and the flower are indolent, and the whole resides in the seed alone, where it manifests itself by its remarkable fragrance, and aromatic taste. We find that seeds are more fully possessed of this virtue, when they arrive at perfect maturity.

We must not omit, that these desirable properties are found only in the roots of certain plants, as appears in avens and in orpine, whose roots smell like a rose. Roots of this kind should be gathered, for the present purpose, at that time when they are richest in these virtues ; which is generally at that season of the year just before they begin to sprout, when they are to be dug up in a morning.

If the virtue here required be contained in the barks or woods of vegetables, then these parts must be chosen for the purpose.

The subject being chosen, let it be bruised, or cut, if there be occasion, and with it fill two-thirds of a still, leaving a third part of it empty, without squeezing the matter close ; then pour as much rain or river water into the still as will fill it to the same height ; that is, two-thirds together with the plant : fit on the head, luting the juncture, so that no vapour may pass through ; and also lute the nose of the still-head to the worm. Apply a receiver to the bottom of the worm, that no vapour may fly off in the distillation : but that all the vapour being condensed in the worm by cold water in the worm-tub, may be collected in the receiver.

Let the plant remain thus in the still to digest for twenty-four hours, with a small degree of heat. Afterwards raise the fire, so as to make the water in the still boil ; which may be known by a certain hissing noise proceeding from the breaking bubbles of the boiling matter ; as also by the pipe of the still-head, or the upper end of the worm, becoming too hot to be handled ; or the smoking of the water in the worm-tub heated by the top of the worm ; and, lastly, by



the following of one drop immediately after another, from the nose of the worm, so as to form an almost continual stream. By all these signs we know that the requisite heat is given : if it be less than a gentle ebullition, the virtues of the simple, here expected, will not be raised ; on the contrary, when the fire is too strong, the water hastily rises into the still-head, and fouls both the worm and the distilled liquor ; and the plant being also raised, it blocks up the worm : for which reason, it is no bad caution to fasten a piece of fine linen before the pipe of the still-head, that, in case of this accident, the plant may be kept from stopping up the worm ; but, notwithstanding this precaution, if the fire be too fierce, the plant will stop up the pipe of the still-head, and consequently the rising vapour finding no passage, will blow off the still-head, and throw the boiling liquor about the still-house, so as to do a great deal of mischief, and even suffocate the operator, without a proper caution ; and the more oily, tenacious, gummy, or resinous the subject is, the greater the danger in case of this accident, because the liquor is the more frothy and explosive.

Let the due degree of fire therefore be carefully observed, and equally kept up, as long as the water distilling into the receiver is white, thick, odorous, sapid, frothy, and turbid ; for this water must be carefully kept separate from that which follows it. The receiver therefore should be often changed, that the operator may be certain that nothing but this first water comes over ; for there afterwards arises a water that is transparent, thin, and without the peculiar taste and flavour of the plant, but generally somewhat tarnished and limped, though somewhat obscured and fouled by white dreggy matter ; and if the head of the still be of copper, and not tinned, the acidity of this last water corrodes the copper, so as to become green, nauseous, emetic, and poisonous to those who use it, especially to children, and persons of weak constitutions.

The first water above described principally contains the oil and presiding spirit of the plant ; for the fire, by boiling the subject, dissolves its oil, and reduces it into small particles, which are carried upwards by the assistance of the water, along with those parts of the plant that become volatile with their motion. And, if the vessels are exactly closed, all these being united together will be discharged without loss, and without much alteration, into the receiver ; and consequently, furnish us with a water richly impregnated



with the smell, taste, and particular virtues, of the volatile parts of the plants it was extracted from.

The water of the second running wants the volatile part above described, and has scarce any other virtue than that of cooling.

And this is the best method of preparing simple waters, provided the two sorts be not mixed together, for both of them would be spoiled by such a mixture.

Hence it plainly appears, at what time, with the same degree of fire, quite contrary virtues may arise from a plant; for so long as a milky water continues to come over from such plants as are aromatic, so long the water remains warming and attenuating; but when it comes to be thin and pellucid, it is acid and cooling.

Hence we may also learn the true foundation for conducting of distillation: for if the operation be stopped as soon as ever the white water ceases to come over, the preparation will be valuable and perfect; but if, through a desire of increasing that quantity, more be drawn off, and the latter acid part suffered to mix with the first running, the whole will be spoiled, or at least rendered greatly inferior to what it would otherwise have been.

Such is the general method of procuring simple waters, that shall contain the volatile virtues of the plants distilled; some rules are however necessary to render it applicable to all sorts of plants; these rules are the following:

1. Let the aromatic, balsamic, oily, and strong smelling plants, which long retain their natural fragrance, such as balm, hyssop, juniper, marjorum, mint, origanum, pennyroyal, rosemary, lavender, sage, &c. be gently dried a little in the shade; then digest them, in the same manner as already mentioned, for twenty-four hours, in a close vessel, with a small degree of heat, and afterwards distil in the manner above delivered, and thus they will afford excellent waters.

2. When waters are to be drawn from barks, seeds, or woods that are very dense, ponderous, tough and resinous, let them be digested for three, four, or more weeks, and with a greater degree of heat, in a close vessel, with a proper quantity of salt added, to open and prepare them the better for distillation. The quantity of sea-salt is here added, partly to open the subject the more, but chiefly to prevent putrefaction, which otherwise would certainly happen

in so long a time, and with such a heat as is necessary in this case, and so destroy the smell, taste, and virtues expected from the process.

3. Those plants which diffuse their odour to some distance from them, and thus soon lose it, should immediately be distilled after being gathered in a proper season, without any previous digestion : thus borage, bugloss, jessamine, white lilies, lilies of the valley, roses, &c. are hurt by heat, digestion, or lying in the air.

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#### CHAPTER IV.

##### *Of increasing the virtues of Simple Waters by means of cohobation.*

By cohobation is meant the returning the distilled water, procured in the manner described in the preceding chapter, upon more of the fresh plant. The operation is performed in the following manner :—

Take the plant and liquor remaining in the still after the operation described in the foregoing chapter is performed, and press them strongly in a bag for that purpose, that all the decoction may be obtained ; and with this mix all the water before drawn over. Return this mixture into the still, and a fresh quantity of the same plant, and, if necessary, as much water as will make the former proportion to the plant. Close all the junctures exactly, and digest the whole in a gentle degree of heat for three days and three nights, that the herb, being so long steeped in its own liquor, may be opened, loosened, and disposed the easier to part with its virtues. This digestion is of great service ; but if protracted too long, introduces a change tending to putrefaction. Let the water now be distilled off, in the same manner as before ; only proceeding more cautiously, and somewhat more slowly at first ; because the liquor in the still being now thicker, more impregnated with the plant, and therefore more apt to swell upon feeling the fire, it easily boils over ; but after about half of the expected water is come off, the fire may be gradually raised.

By this method, and carefully observing to change the receiver as soon as the first water is all come over, a noble liquor, highly impregnated with the virtues of the plant,

will be obtained. And as this operation may be repeated as often as desired, the virtues of plants may be thus exalted to any degree the artist shall think proper; which shews the extraordinary power of distillation. This method I would particularly recommend for making the simple water of balm, elder-flowers, roses, and the like simples, but sparingly furnished with an essential oil.

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## CHAPTER V.

*Of the method of procuring a simple water from vegetables, by previously fermenting the vegetable before distillation.*

By this elegant method we obtain the virtues of plants very little altered from what they naturally are, though rendered much more penetrating and volatile. The operation is performed in the following manner:—

Take a sufficient quantity of any recent plant, cut it, and bruise it if necessary; put it into a cask, leaving a space empty at top of about four inches deep: then take as much water as would, when added, fill the cask to the same height, including the plant, and mix therein about an eighth part of honey, if it be cold winter weather; or a twelfth part, if it be warm: in the summer, the like quantity of coarse unrefined sugar might be added instead of honey, or half a ounce of yeast to each pint of water will have the same effect; though most prefer honey for this purpose. When the proper quantity of honey is added to the water, let it be warmed and poured into the cask, and set it in a warm place to ferment for two or three days; but the herbs must not be suffered to fall to the bottom, nor the fermentation above half finished. The whole must then be immediately committed to the still, and the fire raised by degrees; for the liquor containing much fermenting spirits, easily rarifies with the fire, froths, swells, and therefore becomes very subject to boil over; we ought therefore to work slower, especially at first.

By this method there will come over, at first, a limpid, unctuous, penetrating, odorous, sapid liquor, which is to be kept separate; after this there follows a milky, opaque, turbid liquor, still containing something of the same taste

and odour ; and at length comes one that is thin, acid, without either smell, or scarce any property of the plant.

The first water, or rather spirit, may be kept several years, in a close vessel, without changing or growing ropy. It also excellently retains the taste and odour of the plant, though a little altered ; but if less honey were added, less heat employed, or the fermentation continued for a smaller time, the distilled liquor of the first running would be white, thick, opaque, unctuous, frothy, and perfectly retain the scent and taste of the plant, or much less altered than in the former case, though the water will not be so sharp and penetrating. After this is drawn off, a tartish, limpid, inodorous liquor will come over.

And thus may simple waters be made fit for long keeping without spoiling ; the proportion of inflammable spirit generated in the fermentation, serving excellently to preserve them.

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## CHAPTER VI.

### *Of the Simple Waters commonly in use.*

SIMPLE waters are not so much used at present as they were formerly ; and perhaps one reason for their being neglected, is the bad method used in distilling them : the process is carried on in the same manner with every herb ; though some should be gently dried, and others distilled green ; some should be drawn with the cold, and others with the hot still.

The general rule that should be observed with regard to the hot still is, that all herbs should have twice their weight of water added to them in the still ; and not above a fourth or a sixth part of it drawn off again ; for simple waters have their faints, if drawn too low, as well as those that are spirituous.

Some plants, particularly balm, require to have the water drawn from them cohobated, or poured several times on a fresh parcel of the herb, in order to give it a proper degree of strength or richness. Others, on the contrary, abound too much with an essential oil that floats on the distilled water ; in this case, all the oil should be carefully taken off. Lastly, those that contain a more fixed oil, should be im-



perfectly fermented, in the manner laid down in the preceding chapter, before they are distilled ; of this kind are carduos, camomile, &c.

The simple waters now commonly made, are orange-flower water, rose water, cinnamon water, fennel water, peppermint water, spearmint water, balm water, pennyroyal water, Jamaica pepper or alspice water, castor water, simple water of orange-peel, and of dill-seed.

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## CHAPTER VII.

### OF ROSE WATER.

THE damask rose is the species intended to be used in this operation ; it is of a very fragrant smell, and flowers in June and July. The water may be made either by the hot still, the cold still, or the *Balneum Mariæ*. If the hot still be used, the leaves picked from the stalks must be put into the still with a sufficient quantity of water to prevent an empyreuma, and the water drawn off by a gentle fire. The receiver must be luted with a bladder to the nose of the worm to prevent the finest and most volatile parts from evaporating, which they would otherwise do, to the great prejudice of the water.

If the cold still be used, the rose leaves, either with the dew on them, or sprinkled with water, must be laid on the iron plate, and covered with the conical head. A gentle fire must then be made under the plate, and a receiver luted with a bladder to the nose of the still. The water will gradually distil into the receiver, and be strongly impregnated with the odoriferous parts of the roses.

The same method, with regard to the *Balneum Mariæ*, must be used in the distillation of roses as in that of orange-flowers, and therefore need not be repeated here. We shall therefore only observe, that rose water, drawn either by the cold still or the *Balneum Mariæ*, is much preferable to that drawn by the hot still.

The essence, or essential oil of roses is looked upon as one of the most valuable pertumes in the world ; but at the same time the most difficult to be procured in any quantity. A small quantity of it is made in Italy, but it has always been thought impossible to procure it here ; and, therefore,



a method of acquiring this valuable commodity will not, I presume, be disagreeable to the reader.

Take a quantity of damask rose leaves, put them into a proper vessel, with a sufficient quantity of water, adding some mineral acid, as spirit of salt, vitriol, &c. In this menstruum let the roses be digested for fifteen days; after which put the whole into an alembic, and draw off the water with a pretty brisk fire. But, instead of the common receiver, a separating glass must be placed under the nose of the worm, and a receiver added to the tube of the separating glass. By this means all the oil or essence will float on the surface of the water in the separating glass, and may easily be separated from it, when the operation is finished.

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## CHAPTER VIII.

### OF CINNAMON WATER.

CINNAMON is a thin fine bark, rolled up in a sort of little pipes, from the thickness of a goosequill to that of a man's thumb, and sometimes more, and about two or three feet long. Its colour brownish, with a mixture of red. It is of an extremely aromatic smell, and of an acrid and pungent, but very agreeable taste. It is the interior or second bark of a tree that grows plentifully in Ceylon. The people who gather it take off the two barks together, and immediately separating the outer one, which is rough, and has very little fragranc y, they lay the other to dry in the shade in an airy place, where it rolls itself up into the form wherein we see it.

The greatest cheats in the sale of cinnamon, are the selling such as has already had its essential oil distilled from it, and dried again, and the imposing cassia lignea in its place. The first of these is discovered by the want of pungency in the cinnamon; the second by this, that the cassia, when held a little time in the mouth, becomes mucilaginous, which the true cinnamon never does. Cinnamon is a nible drug, endued with many capital virtues; it strengthens the viscera, assists concoction, dispels flatulencies, and is a pleasant cardiac.

#### RECEIPT FOR ONE GALLON OF SIMPLE CINNAMON WATER.

Take a pound of the best cinnamon grossly powdered;

Digest for twenty-four hours in two gallons of water ; put the whole into an alembic, and draw over one gallon with a pretty brisk fire.

The oil of cinnamon, in which the specific virtue of the drug consists, is very ponderous, and therefore will not come over the helm unless the fire be pretty brisk, especially with a simple water. It will therefore be in vain to attempt distilling simple cinnamon water by the *Balneum Mariæ*.

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## CHAPTER IX.

### OF FENNEL WATER.

FENNEL WATER is extracted from a seed larger and more beautiful than that produced by our common fennel ; it is called *Sweet Fennel-seed*, being of a fragrant smell, and aromatic sweet taste, and is cultivated in France and Italy. It is to be chosen new, large, and fair ; but when damp or dusty, to be rejected.

#### RECEIPT FOR ONE GALLON OF FENNEL WATER.

Take one pound of sweet fennel-seeds, and two gallons of water ; put them into an alembic, and draw off one gallon with a gentle fire.

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## CHAPTER X.

### OF PEPPERMINT WATER.

PEPPERMINT is a very celebrated stomachic, and on that account greatly used at present, and its simple water often called for.

#### RECEIPT FOR A GALLON OF PEPPERMINT WATER.

Take of the leaves of dried peppermint, one pound and a half ; water, two gallons and a half ; put all into an alembic, and draw off one gallon, with a gentle fire.

The water obtained from peppermint by distillation in *Balneum Mariæ*, is more fragrant and more fully impregnated with the virtues of the plant than that drawn by the alembic. The same may be said with regard to that ex-

tracted by the cold still : when the cold still is used, the plant must be green, and, if possible, committed to the still with the morning dew upon it.

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## CHAPTER XI.

### OF SPEARMINT WATER.

SPEARMINT is also, like peppermint, a great stomachic, and therefore constantly used.

#### RECEIPT FOR ONE GALLON OF SPEARMINT WATER.

Take of the leaves of dried spearmint one pound and a half ; water, two gallons and a half ; draw off by a gentle fire one gallon.

This water, like that drawn from peppermint, will be more fragrant if distilled in *Balneum Mariæ*, or the cold still ; but if the latter be used, the same caution must be observed of distilling the plant green.

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## CHAPTER XII.

### OF BALM WATER.

BALM is a plant well known in our gardens. It flowers in July, and is of a fine cordial flavour ; but so weak, that it is soon dissipated and lost ; nor is it easy to dry it, so as to preserve its natural scent.

Balm water, therefore, should be drawn when the plant is green ; and in order to procure the water in full perfection, it should be cohobated, or returned several times upon fresh parcels of the plant : by this means, a water may be procured from balm extremely rich, and of considerable use as a cordial.

If the *Balneum Mariæ* be used, the water is much better than that drawn by an alembic. The water drawn from this plant by the cold still will also be very fragrant, and highly impregnated with the virtues of the plant.

## CHAPTER XIII.

## OF PENNYROYAL WATER.

PENNYROYAL, a plant very common in England, is very warm, and its parts very subtile and penetrating: it is one of the first plants in esteem in the present practice, as well as in former ages, as an attenuant and uterine. It is good in flatulencies and suppressions of urine, and by many is greatly recommended in dropsies, jaundices, and other chronic distempers. It communicates its virtues to water in infusion, and its simple water has, perhaps, more virtue than any other kept in the shops. But as it is requisite, in order to obtain a water fully impregnated with the virtues of balm, to cohobate it on fresh parcels of the plant, the water drawn from green pennyroyal, on the contrary, generally contains so large a portion of the essential oil, that it is necessary to separate what floats on the surface of the water by the separating glass.

## RECEIPT FOR ONE GALLON OF PENNYROYAL WATER.

Take of the dried leaves of pennyroyal one pound and a half; of water, three gallons; draw off one gallon with a gentle fire.

The water drawn from green pennyroyal by the cold still is very fragrant, and fully impregnated with the virtues of the plant.

## CHAPTER XIV.

## OF JAMAICA PEPPER OR ALSPICE WATER.

JAMAICA pepper, or pimento, is the fruit of a tall tree growing in the mountainous parts of Jamaica, where it is much cultivated, because of the great profit arising from the cured fruit, sent in large quantities annually into Europe.

It is gathered when green, and exposed to the sun for many days on cloths, and frequently shook and turned, till thoroughly dry: great care is taken during the time of drying to defend the fruit from the morning and evening dews; when thoroughly dried, it is sent over to us.

It is a very noble aromatic, and deserves to be used more frequently than it is at present. The simple water drawn from it is a better carminative than any other simple water at present in use.

RECEIPT FOR A GALLON OF JAMAICA PEPPER ALSPICE WATER.

Take of Jamaica pepper half a pound, water two gallons and a half; draw off one gallon with a pretty brisk fire. The oil of this fruit is very ponderous, and therefore this water is best made in an alembic.

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## CHAPTER XV.

### OF ORANGE-PEEL WATER.

THE orange is a fruit too well known to need a description here. The water is very grateful to the taste, and often used in fevers, &c.

RECEIPT FOR ONE GALLON OF ORANGE-PEEL WATER.

Take of the outward yellow rind of Seville oranges four ounces, water three gallons and a half; draw off one gallon by the alembic, with a pretty brisk fire.

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## CHAPTER XVI.

### OF THE WATER OF DILL-SEED.

DILL greatly resembles fennel, both in root, stalk, or leaf, but rarely grows so tall, or is so much branched; it bears the same kind of yellow umbels of flowers, after which comes seeds, rounder, broader, and flatter than those of fennel. The whole plant is of a strong scent, less pleasant than fennel. It grows in gardens, and flowers and seeds in July and August. The water drawn from the seeds is heating and carminative, good in cholics, and all disorders arising from wind.

*Receipt for making a gallon of the Water of Dill-Seed.*

Take of dill-seed one pound, water three gallons; distil off by the alembic one gallon, with a pretty brisk fire.



The waters we have enumerated in this part are those now commonly in use, though there are many other herbs from whence waters of great use may be drawn; but as the method of distillation is the same in all, it would be of no use to extend these instructions to a greater length; we shall therefore only observe, that when unfavourable seasons have prevented the herbs from attaining a proper degree of perfection, it will be necessary to increase their proportion in extracting the several waters ordered to be drawn by the alembic.

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## PART III.

### OF MAKING COMPOUND WATERS AND CORDIALS.

The general rules, which are highly necessary to be observed, for the perfection of this grand branch of distilling, will be found at page 270.

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## CHAPTER I.

### *Of Strong Cinnamon Water.*

WE have already [Chap. viii. Part II.] described this drug, and given some directions for chusing the best sort, to which the reader is referred.

#### *Receipt for Sixteen Gallons of Strong Cinnamon Water.*

Take eight pounds of fine cinnamon bruised, seventeen gallons of clear rectified spirit, and two gallons of water. Put them into your still, and digest them twenty-four hours with a gentle heat; after which draw off sixteen gallons by a pretty strong heat.

I have ordered a much larger quantity of cinnamon than is common among distillers, because when made in the manner above directed, it is justly looked upon as one of the noblest cordial waters of the shops; but when made in the common way, of two pounds to twenty gallons of spirit,

as some have ordered, is only an imposition on the buyer. Some also, to render the goods cheaper, use equal quantities of cinnamon and cassia lignea; but by this means the cordial is rendered much worse: and, therefore, if you desire a fine cinnamon water the above receipt will answer your intention; but if a cheaper sort be desired, you may lessen the quantity of cinnamon, and add cassia lignea in its stead. If you would dulcify your cinnamon water, take double-refined sugar what quantity you please, (the general proportion is about two pounds to a gallon,) and dissolve it in the spirit after you have made it up proof with clean water. One general caution is here necessary to be added, viz. that near the end of the operation you carefully watch the spirit as it runs into the receiver, in order to prevent the faints mixing with the goods. This you may discover by often catching some of it, as it runs from the worm, in a glass, and observing whether it is fine and transparent; for as soon as ever the faints begin to rise, the spirit will have an azure or bluish cast. As soon therefore as you perceive this alteration, change the receiver immediately; for if you suffer the faints to mix with your other goods, the value of the whole will be greatly lessened. With regard to the faints they are to kept by themselves, and poured into the still when a fresh parcel of the same goods is to be made.

It is necessary to observe here, once for all, that the distillers call all goods made up proof, *double goods*; and those which are below proof, *single*. This observation will be alone sufficient to instruct the young distiller how he may at any time turn his proof or double goods into single.

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## CHAPTER II.

### *Of Clove Water.*

CLOVES, from whence this water takes its name, are the fruit of a tree growing in the Molucca Islands. The figure of this fruit is oblong, and not very thick, resembling, in some measure, a nail. The surface of it is rough, and the colour a dusky brown, with an admixture of reddish. The whole fruit is of an extremely fragrant smell, and of an acrid,

pungent, and very aromatic taste. Cloves are to be chosen the largest, fairest, darkest coloured, the heaviest, and not unctuous on the surface when pressed between the fingers. Cloves are carminative, and good against all distempers of the head arising from cold causes. They strengthen the sight, and are good against faintings, palpitations of the heart, and crudities in the stomach.

*Receipt for fifteen gallons of Clove Water.*

Take of cloves bruised four pounds, pimento, or alspice, half a pound, clean proof spirit sixteen gallons; let it digest twelve hours in a gentle heat, and then draw off fifteen gallons with a pretty brisk fire. Or,

Take Winter's bark four pounds, pimento six ounces, cloves one pound and a quarter, clean proof spirits sixteen gallons; digest, and draw off as before.

The Winter's bark, added in the second receipt, is the bark of a large tree growing in several parts of America, and has its name from its discoverer, Captain Winter.

The outer rind of it is of an uneven surface, and of a loose texture, very brittle, and easily powdered. The inner part, in which the principal virtue resides, is hard, and of a dusky reddish-brown colour. It is of an extremely fragrant and aromatic smell, and of a sharp, pungent, and spicy taste, much hotter than cinnamon in the mouth, and leaving in it a more lasting flavour. It is to be chosen in pieces not too large, having the inner or brown part firm and sound, and of a very pungent taste. It is apt to be worm-eaten; but in that case it should be wholly rejected, as having lost the most essential part of its virtue.

If you desire to have your clove water red, it may be coloured either by a strong tincture of cochineal, alkanet-root, or corn-poppy flowers. The first gives the most elegant colour; but it is not often used on account of its dearness.

You may dulcify it to your palate by dissolving in it double-refined sugar. Some for cheapness use a coarser kind of sugar; but this renders the goods foul and unsightly. Some also, to save expenses, make what they call clove water, with cloves and carraway seeds: the proportion they generally use is half an ounce of cloves, and two drachms of caraway seeds to a gallon of spirits.

## CHAPTER III.

*Of Lemon Water.*

THE peel of the lemon, the part used in making this water, is a very grateful bitter aromatic, and on that account very serviceable in repairing and strengthening the stomach.

*Receipt for ten gallons of Lemon Water.*

Take of dried lemon-peel four pounds, clean proof spirits ten gallons and a half, and one gallon of water. Draw off ten gallons by a gentle fire. Some dulcify lemon water; but by that means its virtues as a stomachic are greatly impaired.

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## CHAPTER IV.

*Of Hungary Water.*

ROSEMARY, the principal ingredient in Hungary water, has always been a favourite shrub in medicine; it is full of volatile parts, as appears by its taste and smell. It is a very valuable cephalic, and is good in all disorders of the nerves; in hysteric and hypochondriac cases, in palsies, apoplexies and vertigoes. Some suppose that the flowers possess the virtues of the whole plant in a more exalted degree than any other part; but the flowery tops, leaves, and husks, together with the flowers themselves, are much fitter for all purposes than the flowers alone.

*Receipt for ten gallons of Hungary Water.*

Take of the flowery tops, with the leaves and flowers of rosemary, fourteen pounds, rectified spirit eleven gallons and a half, water one gallon; distil off ten gallons with a moderate fire. If you perform this operation in *Balneum Mariæ*, your hungary water will be much finer than if drawn by the common alembic.

This is called Hungary water, from its being first made for a princess of that kingdom. Some add lavender flowers, and others Florentine orice-root; but what is most esteemed is made with rosemary only.

## CHAPTER V.

*Of Lavender Water.*

THERE are two sorts of lavender water, the simple and compound: the first is most used externally on account of its fragrancy and cephalic virtues; the latter internally in a great number of disorders.

*Receipt for ten gallons of Simple Lavender Water.*

Take fourteen pounds of lavender flowers, ten gallons and a half of rectified spirit of wine, and one gallon of water; draw off ten gallons with a gentle fire; or, which is much better, in *Balneum Mariæ*.

Both the Hungary and lavender water may be made at any time of the year without distillation, by mixing the oil of the plant with highly rectified spirit of wine. In order to this, when the plant is in perfection, you should distil a large quantity of it in water with a very brisk fire; placing under the nose of the worm the separating glass, (described page 358. Part I. of this Treatise,) by which means you will obtain the essential oil of the plant, in which both its fragrancy and virtue reside. Having procured the essential oil of the plant, the water may readily be made in the following manner:—Put the rectified spirit into the receiver (described page 359, fig. 12.) and let an assistant shake it with a quick motion: whilst the spirit is agitated, drop in leisurely the essential oil, and it will mix without any foulness or milkiness. The oils of lavender and rosemary are imported cheaper from abroad than they can be made here; but these oils will not mix with the spirit without rendering it foul and milky; and therefore if you propose making Hungary or lavender water in this manner, it will be necessary to extract the oil yourself.

*Receipt for making three gallons of Compound Lavender Water.*

Take of lavender water above described two gallons, of Hungary water one gallon, cinnamon and nutmegs of each three ounces, and of red saunders one ounce; digest the



whole three days in a gentle heat, and then filter it for use. Some add saffron, musk, and ambergris, of each half a scruple; but these are now generally omitted.

This compound lavender water has been long celebrated in all nervous cases. In all kinds of palsies, and loss of memory, it is of the greatest service; and has been so much remarked for its efficacy in these complaints, as almost universally to obtain the name of *Palsy Drops*.

## CHAPTER VI.

### *Of Citron Water.*

THE citron is an agreeable fruit, resembling a lemon in colour, smell, and taste. The inside is white, fleshy, and thick, containing but a small quantity of pulp, in proportion to the bigness of the fruit.

#### *Receipt for making ten gallons of Citron Water.*

Take of dry yellow rinds of citron four pounds, clean proof spirits ten gallons and a half, water one gallon; digest the whole twenty-four hours with a gentle heat; and draw off ten gallons with a gentle fire, or, which is much better, in *Balium Mariæ*, and dulcify it with fine sugar to your palate. Or,

Take of dry yellow rinds of citron three pounds, of orange peel two pounds, nutmegs bruised three quarters of a pound; digest, draw off, and dulcify as before.

This is one of the most pleasant cordials we have; and the addition of the nutmegs, in the second receipt, increases its virtue as a cephalic and stomachic.

## CHAPTER VII.

### *Of Aniseed Water.*

ANISEED is a small seed of an oblong shape, each way ending in an obtuse point; its surface is very deeply striated, and it is of a soft and lax substance, very light and easily broken. Its colour is a kind of pale olive, or greenish-grey;

It has a very strong and aromatic smell, and a sweetish but acrid taste, but in the whole not disagreeable. Aniseed should be chosen large, fair, new, and clean, of a good smell, and acrid taste. the plant that produces it is cultivated in many parts of France; but the finest seed comes from the island of Malta, where it is raised for sale and whence a great part of Europe is supplied.

*Receipt for ten gallons of Aniseed Water.*

Take of aniseed bruised two pounds, proof spirits twelve gallons and a half, water one gallon; draw off ten gallons, with a moderate fire. Or,

Take of the seeds of anise and angelica, each two pounds, proof spirits twelve gallons and a half; draw off as before.

Aniseed water should never be reduced below proof, because of the large quantity of oil with which the spirit is impregnated, and which will render the goods milky and foul when brought down below proof; but if there be a necessity for doing this, the goods must be filtrated either through paper or the filtrating bag, which will restore their transparency. Aniseed water is a good carminative, and therefore in great request among the common people against the choleric.

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## CHAPTER VIII.

### *Of Caraway Water.*

CARAWAY SEED is of an oblong and slender figure, pointed at both ends, and thickest in the middle. It is striated on the surface, considerable heavy, of a deep brown colour, and somewhat bright or glossy. It is of a very penetrating smell, not disagreeable, and of a hot, acrid, and bitterish taste. Caraway seed is to be chosen large, new, and of a good colour, not dusty, and of an agreeable smell. The plant which produces the caraway seed grows wild in the meadows of France and Italy, and in many other places; but is sown in fields for the sake of the seeds in Germany, and many others parts of Europe.

*Receipt for making ten gallons of Caraway Water.*

Take of caraway seed bruised three pounds, proof spirit

twelve gallons, water two gallons ; draw off ten gallons, or till the faints begin to rise ; make the goods up with clean water, and dulcify with common sugar to your taste. Or,

Take of caraway seed bruised two pounds and a half, orange or lemon-peel dried one pound, proof spirits twelve gallons, water two gallons ; draw off and dulcify as before.

Caraway water, like that of aniseed, is a good carminative ; but not so much used, though much pleasanter.

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## CHAPTER IX.

### *Of Cardamom Seed Water.*

THE seed from whence this water takes its name, is called by botanists *Cardamum Minus*, or the lesser cardamom, to distinguish it from the *Cardamomun Majus*, or grains of paradise.

The lesser cardamom is a small short fruit, or membranaceous capsule, of a trigona form, about a third of an inch long, and swelling out thick about the middle ; beginning small and narrow from the stalk, and terminating in a small but obtuse point at the end. It is striated all over very deeply with longitudinal furrows, and consists of a thin but very tough membrane, of a fibrous texture, and pale-brown colour, with a faint cast of red. When the fruit is thoroughly ripe, this membrane opens at the three edges all the way, and shews that it is internally divided by three thin membranes into three cells, in each of which is an arrangement of seeds, separately lodged in two series. The seeds are of an irregular angular figure, rough, and of a dusky brown colour on the surface, with a mixture of yellowish and reddish, and of a white colour within. They have not much smell, unless first bruised, when they are much like camphire under the nose. They are of an acrid, aromatic, and fiery hot taste. They should be chosen sound, close shut on all sides, and full of seeds, of a good smell, and of an acrid aromatic taste.

### *Receipt for ten gallons of Cardamom Seed Water.*

Take of the lesser cardamom seeds husked two pounds and a half, of clean proof spirit ten gallons and a half, and of water one gallon ; draw off ten gallons by a gentle heat.

You may either dulcify it or not with fine sugar at pleasure.

This water is carminative, assists digestion, and good to strengthen the head and stomach.

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## CHAPTER X.

### *Of Mint Water.*

THE mint intended in this receipt is the common spearmint, an account of which has already been given, page 406.

#### *Receipt for ten gallons of Mint Water.*

Take of dry spearmint leaves fourteen pounds, proof spirit ten gallons and a half, water two gallons; draw off ten gallons by a gentle heat. You may dulcify it with sugar if required.

Mint water is greatly recommended by the learned Boerhaave and Hoffman, against vomiting, nauseas, and the cholic.

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## CHAPTER XI.

### *Of Peppermint Water.*

THE peppermint has been already described, page 405, to which the reader is referred.

#### *Receipt for ten gallons of Peppermint Water.*

Take of dry peppermint leaves fourteen pounds, proof spirit ten gallons and a half, water one gallon; draw off ten gallons by a gentle fire. You may either dulcify it or not.

Peppermint water is a noble stomachic, good against vomiting, nauseas, cholic, and other griping pains in the bowels, in all which intentions it greatly exceeds the common spearmint water.

## CHAPTER XII.

*Of Angelica Water.*

THERE are two sorts of angelica water, the single and the compound. I shall give receipts for making both kinds ; and with regard to the nature of angelica, it is sufficient to observe, that it is an excellent carminative.

*Receipt for ten gallons of single Angelica Water.*

TAKE of the roots and seeds of angelica, cut and bruised, of each one pound and a half, proof spirit eleven gallons, water two gallons : draw off ten gallons, or till the fumes begin to rise, with a gentle fire ; and dulcify it, if required, with lump sugar.

This angelica water is a good carminative, and therefore good against all kinds of flatulent cholics, and gripings of the bowels.

*Receipt for ten gallons of compound Angelica Water.*

TAKE of the roots and seeds of angelica, and of sweet fennel seeds, of each one pound and a half, of the dried leaves of balm and sage, of each one pound ; slice the roots, and bruise the seeds and herbs, and add to them of cinnamon one ounce, of cloves, cubeds, galangals, and mace, of each three quarters of an ounce, of nutmegs, the lesser cardamom seed, pimento and saffron, of each half an ounce ; infuse all these in twelve gallons of clean proof spirit, and draw off ten gallons, with a pretty brisk fire. It may be dulcified or not at pleasure.

This is an excellent composition, and a powerful carminative ; and good in all flatulent cholics, and other griping pains in the bowels. It is also good in nauseas, and other disorders of the stomach.

It may not be amiss to observe here, that in distilling this and several other compositions, abounding with oily seeds, the operator should be careful not to let the fumes mix with the other goods, as they would by that means be rendered nauseous and unsightly : he should therefore be careful, towards the latter end of the operation, to catch some of the spirit as it runs from the worm in a glass ; and



as soon as ever he perceives it the least cloudy, to remove the receiver, and draw the faints by themselves.

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### CHAPTER XIII.

#### *Of Orange Water.*

THIS water is made in the same manner from the peels of oranges, as citron water (Chap. vi.) is from the peels of citrons.

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### CHAPTER XIV.

#### *Of Wormwood Water.*

THERE are two sorts of wormwood water, distinguished by the epithets of *greater* and *lesser*.

#### *Receipt for ten gallons of the lesser Composition of Wormwood Water.*

Take of the leaves of dried wormwood, five pounds ; of the lesser cardamom seeds, five ounces ; of coriander seeds, one pound ; of clean proof spirit, eleven gallons ; water, one gallon. Draw off ten gallons, or till the faints begin to rise, with a gentle fire. It may be dulcified with sugar, or not, at pleasure.

This is a good stomachic and carminative ; and on that account often called for.

#### *Receipt for ten gallons of the greater composition of Wormwood Water.*

Take of the common and sea wormwood, dried, of each ten pounds ; of sage, mint, and balm, dried, of each twenty handfuls ; of the roots of galangal, ginger, calamus aromaticus, and elecampane, of the seed of sweet fennel and coriander, of each three ounces ; of cinnamon, cloves, and nutmegs, the lesser cardamoms and cubebs, of each two ounces. Cut and bruise the ingredients as they require ; digest them twenty-four hours in eleven gallons of water ; and draw off ten gallons, or till the faints begin to rise, with a pretty brisk fire.

This is an excellent composition, and good in all diseases

of the stomach, arising either from wind or a bad digestion. It is greatly in use in some parts of England, but comes too dear for the common sort of people; on which account a cordial water is often sold under the title of *the greater composition of wormwood water*, drawn from the leaves of wormwood, orange and lemon-peel, calamus aromaticus, pimento, and the seeds of anise and caraway; which being all cheap ingredients, the composition may be sold at a moderate price. A water drawn in this manner is a good carminative, but far inferior to that made by the above receipt.

## CHAPTER XV.

### *Compound Camomile Flower Water.*

THE camomile flowers generally used are the double sort, consisting wholly of petals or flower leaves, without any appearance of stamina or pistil, or the other parts of fructification, which, in the single flowers, shew themselves in the middle in form of yellow threads. But though the double flowers are the sort commonly used, they are not the best, or those which ought to be chosen. The single flowers, or those which consist of only a single series of leaves, or petals, in form of rays, surrounding a cluster of yellow threads of stamina, have much more virtue. It is, indeed, in these stamina and their apices that great part of the virtue of the flower resides, and these are wanting in the double flowers.

### *Receipt for making ten gallons of Compound Camomile Flower Water.*

Take of dried camomile flowers, five pounds; of the outer peel of oranges, ten ounces; of the leaves of common wormwood and pennyroyal, of each twenty handfuls; of the seed of anise, cummin, sweet fennel, the berries of bay and juniper, of each five ounces. Digest these ingredients two days in ten gallons of proof spirit, and three gallons of water, and draw off ten gallons with a gentle fire.

This is a very good carminative and stomachic; good in all cholics and other disorders of the bowels from wind. It also provokes the appetite, and promotes a good digestion. Its virtues as a stomachic will not be less when made from

the double flowers; but if intended as a carminative, it should be made with the single flowers.

---

## CHAPTER XVI.

*Of Nutmeg Water.*

THE nutmeg is a kernel of a large fruit not unlike the peach, and is separated from that and its investient coat the mace, before it is sent over to us; except when the whole fruit is sent over in preserve, by way of sweetmeat, or as a curiosity. There are two kinds of nutmegs, the one called by authors the male, and the other the female. The female is the kind in common use, and is of the shape of an olive: the male is long and cylindric, and has less of the fine aromatic flavour than the other, so that it is much less esteemed, and people who trade largely in nutmegs will seldom buy it. Besides this oblong kind of nutmeg, we sometimes meet with others of very irregular figures; but these are mere *Lusus Naturæ*, being produced by the same tree. The long or male nutmeg, as we term it, is, by the Dutch, called the wild nutmeg. It is always distinguishable from the others, as well by its want of fragrancý as by its shape; it is very subject to be worm-eaten, and is strictly forbid by the Dutch to be packed among the other, because it will be the means of their being worm-eaten also, by the insects getting from it into them, and breeding in all parts of the parcel. The largest, heaviest, and most unctuous of the nutmegs are to be chosen, such as are of the shape of an olive, and of the most fragrant smell.

*Reccipt for making ten gallons of Nutmeg Water.*

Take of nutmegs, bruised, one pound; proof spirit, ten gallons; water two gallons. Digest them two days, and then draw off ten gallons with a brisk fire. You may dulcify it or not, as occasion offers. Or,

Take of nutmegs, bruised, one pound; orange peel two ounces; spirit ten gallons, water two gallons. Digest and distil as before.

This is an excellent cephalic and cordial water; agreeable to the palate, comfortable to the stomach, and grateful to the nerves. It powerfully discusses wind and vapours

from the stomach and bowels, and is therefore of great service in the cholic, and griping of the bowels.

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## CHAPTER XVII.

### *Of compound Bryony Water.*

THE white bryony root, from whence this water takes its name, is one of the largest roots we are acquainted with. It is of an oblong shape, and is frequently met with of the thickness of a man's arm, sometimes of twice or three times that bigness. Its texture is somewhat lax and spongy; considerably heavy. but so soft that the thickest pieces are easily cut through with one stroke of a knife; it is very juicy, and is externally of a brownish or yellowish-white colour, and of a pure white within: it is of a disagreeable smell, and an acrid and nauseous taste.

#### *Receipt for making ten pounds of Bryony Water.*

Take of the roots of bryony, four pounds; wild valerian root one pound; of pennyroyal and rue, of each two pounds; of the flowers of fever-few, and tops of savin, of each four ounces; and of the rind of fresh orange-peel, and lovage seeds, of each half a pound: cut or bruise these ingredients, and infuse them in eleven gallons of proof spirit, and two gallons of water, and draw off ten gallons with a gentle heat. Or,

Take of fresh bryony root, four pounds: of the leaves of rue and mugwort, of each four pounds; of the tops of savin, six handfuls; of fever-few, catmint, and pennyroyal, of each four handfuls; of orange-peel, eight ounces; of myrrh, four ounces; of Russia castor, two ounces; proof spirit, eleven gallons; water two gallons. Digest and distil as before.

This composition is very unpalatable, but excellently adapted to the intention of an hysteric, in which cases it is used with success. It is very forcing upon the uterus, and therefore given to promote delivery, and forward the proper cleansings afterwards; as also to open menstrual obstructions, and in abundance of other female complaints. It is also good against convulsions in children, and of service in all nervous complaints of either sex.

It may not be amiss to observe here, that the oily parts of the ingredients will often render the water foul and milky. If, therefore, the distiller desires to have it fine and transparent, the receiver must be removed as soon as the liquor at the worm appears the least turbid, which will be long before the fumes begin to rise. The water, however, is not the worse for being milky, with regard to its medicinal virtue. Some, when the liquor is milky, throw in a little burnt alum to fine it; but this should never be done, because it spoils the medicine.

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## CHAPTER XVIII.

### *Of compound Balm Water, commonly called*

#### EAU DE CARMES.

THIS has its name (*Eau de Carmes*) from the Carmelite friars, who were the inventors of it. The great profit accruing to these fathers from the sale of this cordial, induced them to keep the method of making it a secret; but notwithstanding all their care, the secret has at last been discovered, and the following is the method by which they prepare it.

#### *Receipt for two gallons of* EAU DE CARMES.

Take of the fresh leaves of balm, four pounds; of the yellow peel or rind of lemons, two pounds; of nutmegs and coriander seeds, of each one pound; of cloves, cinnamon, and angelica root, of each half a pound. Pound the leaves, bruise the other ingredients, and put them with two gallons of fine proof spirit, into a large glass alembic, (the figure of which, with its head, is represented on the plate, *Fig. 7.*) stop the mouth, and place it in a bath heat to digest two or three days. Then open the mouth of the alembic, and add a gallon of balm water, and shake the whole well together. After this, place the alembic in *Balneum Mariæ*, and distil till the ingredients are almost dry; and preserve the water thus obtained in bottles well stopped.

This water has been long famous both at London and Paris, and carried thence to most parts of Europe. It is a very elegant cordial, and very extraordinary virtues are attributed to it; for it is esteemed very efficacious not only in



lowness of spirits, but even in apoplexies; and is greatly commended in cases of the gout in the stomach.

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## CHAPTER XIX.

### *Of spirituous Pennyroyal Water.*

THE plant from whence this water has its name has been already described, Chap. xiii. Part II.

#### *Receipt for ten gallons of spirituous Pennyroyal Water.*

Take of the leaves of pennyroyal dried, fifteen pounds; proof spirit, ten gallons; water, two gallons; draw off ten gallons with a gentle fire.

This is a good carminative, of use in cholics and gripings of the bowels; also in pleurisies and the jaundice; it is of known efficacy in promoting the menses and other disorders of the female sex.

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## CHAPTER XX.

### *Of compound Parsley Water.*

THE plant from whence this water is denominated, is the common parsley of our gardens: an herb too well known to need description.

#### *Receipt for ten gallons of compound Parsley Water.*

Take of parsley root, one pound and a quarter: fresh horse-radish root, and juniper berries, of each fifteen ounces; the tops of St. John's wort, biting arsmart, and elder flowers, of each ten ounces; the seeds of wild carrot, sweet fennel, and parsley, of each seven ounces and a half; slice and bruise the ingredients, and digest them four days in eleven gallons of spirit and two gallons of water, after which draw off ten gallons.

This is a very good diuretic, frees the kidneys from sand and other matter, which often forms gravel and stones. It is also good in cholic pains, arising from a stone in the bladder, and drains off all ill humours by urine.

## CHAPTER XXI.

*Of Carminative Water.*

THIS water has its name from its use, being an excellent carminative.

*Receipt for ten gallons of Carminative Water.*

Take of fresh camomile flowers, four pounds; dill seed, two pounds and a half; leaves of balm, origany, and thyme, of each one pound; seeds of anise and fennel, of each six ounces; cummin-seed, four ounces; peels of oranges and citrons, of each eight ounces; juniper and bay berries, of each six ounces; cinnamon, eight ounces; mace, four ounces. Digest these ingredients, bruised, in eleven gallons of proof spirit, and two gallons of water; after which draw off ten gallons; and dulcify it with fine sugar.

This is an admirable carminative, and therefore good in all cholicky pains, and gripings of the bowels; and to remove sickness and nauseas from the stomach.

## CHAPTER XV.

*Of the Water of the Four Spices.*

THIS water also derives its name from the four spices from whence it is drawn, viz. cloves, mace, nutmegs, and cinnamon.

*Receipt for a Gallon of the Water of the Four Spices.*

Take of cinnamon two ounces; nutmegs and cloves, of each three drams; mace six drams: bruise the spices in a mortar, and add proof spirits a gallon, and water two quarts. Digest twenty-four hours in a close vessel, and distil with a brisk fire till the faints begin to rise; and dulcify with fine sugar.

This is an excellent stomachic, good in all depressions of the spirits, and paralytic disorders.

## CHAPTER XXII.

*Of the Water of the Four Seeds.*

THIS water has its name from the four seeds from whence it is drawn, viz. the seeds of sweet fennel, coriander, angelica, and anise.

*Receipt for ten gallons of the Water of the Four Seeds.*

Take of sweet fennel seed seven ounces; coriander seed, nine ounces; of the seeds of angelica and anise, of each three ounces: bruise all these in a mortar, and put them into the still, with ten gallons and a half of proof spirits, and two gallons of water: draw off with a gentle fire till the faints begin to rise, and dulcify with fine sugar.

*Of White Ratafia.*

As red fruits are the basis of that called red ratafia, so, on the contrary, that made from the juices of white fruits is denominated white ratafia.

*Receipt for making Ratafia from the Muscat, or white Frontiniac Grape.*

The berries of this kind of grape are large, and grow extremely close upon the bunches, which are very long, and have commonly two shoulders; the fruit, when ripe, has a rich musky flavour: but it is commonly very late in autumn before these grapes are in perfection; and the berries being so very close upon the bunches, detain the moisture in the centre, so that they often perish: to prevent which, some curious persons look over their vines soon after the grapes are formed, and, with a pair of scissors, cut out all small ones, so as to leave the others at a moderate distance, whereby the sun and air are easily admitted, which dissipates the moisture, and prevents their perishing. There is another kind of this grape, called by some the white frontiniac of Alexandria, and by others the Jerusalem muscat, which is a very large grape, and, when ripe, an excellent fruit: but is rarely brought to perfection in England. The berries of the Jerusalem muscat are of an oval shape, and very large. They grow very loose on the bunches, are

very fleshy and firm, and, when ripe, are of a greenish-white, and of a delicate flavour.

Either of these kind of grapes will make very fine ratafia; but, whichever of them are chosen, they must be picked from the stalks, and only the finest berries made use of. The stones must also be picked out; for if they are bruised with the berries, the fine flavour of the juice will be greatly diminished.

When you have picked the grapes from the stalks, and taken out the stones, press out the juice, and filtrate it through a flannel bag. Then add the quantity of sugar and spirit, and flavour it to your mind, with a spirit distilled from spices, in the manner explained below.

The general proportion of sugar and spirit is, to twenty pints of the juice, five pounds and a half of sugar, ten pints of spirit, and what quantity you please of the spicy spirit.

To make the spicy spirit, take of mace one pound, nutmegs four ounces, spirit three gallons, and draw off the whole in *Balneum Mariæ*.

By the same method you may make red ratafia from the red frontiniac; except that the grapes, when bruised, must be suffered to ferment three or four days before the juice is pressed out; because the colour, which resides principally in the skins of the grapes, will, by that means, be extracted.

The berries of the red muscat, or red frontiniac, are about the size of those of the white, but grow much thinner on the bunches. This grape, when thoroughly ripe, has the richest and highest flavour of any yet known; but it must have a dry soil and a south aspect, otherwise it seldom ripens well in England. Besides the above grape, there is another, called by some red muscat of Alexandria, and by others red Jerusalem muscat. This is not quite so late in ripening as the white muscat of Alexandria above described; and for that reason more esteemed. The berries of this kind are not quite so large as those of the white, but of the same form, and equal in goodness.

FINIS.

## INDEX TO THE APPENDIX.

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ACCIDENTS often attending distillation,	Page 359
how prevented,	361
remedies for,	363
Additions, their use,	353
Advantages attending the different kinds of distillation,	368
Air promotes and quickens fermentation,	349
Alembics, different sorts of,	357
described,	358
the common, how used,	368
Glass, its use,	371
Simple waters how distilled by,	396
Angelica water, single,	418
compound,	418
Aniseed described,	414
Aniseed water,	415
Aromatics, their use,	353
<i>Balneum Mariæ</i> described,	370
its uses,	370
Balm water,	406
Balm water, compound,	423
Bodies proper for distillation,	372
Brandies, how distilled in France,	381
Brewing defined,	344
water proper for	345
how performed,	344
Bryony root described,	422
Bryony root, a compound water from	422
Camomile flowers, description of	420
Camomile flowers, a compound water from	420
Caraway seed, description of	413
Caraway seed water,	413
Cardamom seed, description of	416
Cardamom seed water,	416
Caution in distilling vegetables,	397
Cinnamon, description of	404
simple waters drawn from	404
water, spirituous,	410



Citron water, how made,	Page 418
Cloves, description of,	409
a spirituous water from	411
Carminative	425
Cohobation, what	400
Cold still described,	394
Cold still, its uses,	394
Compound waters	410
Digestion, what, and how performed,	376
Dill seeds description of	408
Dill seed, a simple water from	408
Distillation defined,	355
of spirits	343
principles of, explained,	356
worthy the attention of the learned,	356
how divided,	356
<i>per ascensum</i> , what	356
<i>per descensum</i> , what	357
<i>per latus</i> , what	357
accidents attending the processes of	359
particulars advantages attending	368
how performed in the common alembic,	368
how performed in sand,	370
in <i>Balneum Mariæ</i> ,	370
in glass alembics,	371
by the vapour bath,	372
bodies proper for	372
what procured by	374
the proper season for	376
of malt spirits,	378
of molasses spirits,	381
of rum,	383
of raisin spirits,	383
of simple waters, how to be conducted,	393
of compound waters,	409
Double goods, what	410
Drying of plants, why often prejudicial,	396
Faints, their use	392
Fennel seed, description of	405
Fennel simple water	405
Fermentation necessary to the exaction of spirits,	346
defined,	347
theory of	346

Fermentation, practice of	<i>Page</i> 353
how performed to the greatest advantage,	354
how known to be perfected,	355
its use in drawing simple waters,	401
Ferments, what	351
how to procure a stock of	351
the alteration they cause in any neutral fermentable liquor,	352
Filtration, how performed,	377
Fire, how to be regulated,	368
Heat necessary in brewing,	344
Honey, its use as an addition,	352
Hungary water, how made	412
Jamaica pepper, description of	407
how cured,	407
its uses,	408
a simple water from	408
Lavender, virtues of	413
Lavender, a spirituous water from	413
Lemon-peel, a spirituous water from	412
Malt, why preferred in England,	344
how to brew with it to advantage,	344
what part of it dissolve in water,	344
spirits, how distilled,	378
Mint water, spirituous,	417
Motion in fermentation, whence	347
Nutmegs, description of	421
Nutmegs, a spirituous water from	421
Olæsaccharum, what,	353
Orange water, spirituous,	419
peel, a simple water from	408
Parsley water, compound,	424
Pennyroyal, its uses,	407
Pennyroyal water, spirituous,	424
Pennyroyal, a simple water from	407
Peppermint water,	405
Péppermint, spirituous,	417
Pimento, description of	407
Plants, spirit of, what,	398
Plants, what they loose in drying,	399
Principles of distillation explained,	355
Raisin spirit, how extracted,	388
Raisin spirit, great use of	384

Ratiffa white, from grapes,	Page 426
Rectification, what	384
how performad to the greatest advantage,	390
by alkaline salts,	386
by saline bodies,	387
by quicklime,	388
by neutral salts,	388
into Alcohol	389
Rose, description of	403
a water drawn from	404
Rules for conducting simple distillation,	397
Phlegm, what	374
Sand, its use in distillation,	370
Salt, Glauber's, spirit of, its use,	353
Season proper for distilling,	376
Seeds, water of the four	426
Simple waters, what	402
how distilled,	393
their contents,	395
how distilled by the alembic,	396
drawn from a fermented plant,	401
Simple water of balm,	406
of cloves	409
of cinnamon	404
of dill seed,	408
of fennel seed,	405
of Jamaica pepper,	407
of orange peel,	408
of pennyroyal,	407
of peppermint,	405
of roses,	403
of spearmint,	406
Spices, water of the four	425
Spirits, distillation of	343
Spirits not to be extracted without a previous fermentation,	348
from malt, how extracted,	378
how extracted from sugar,	383
from raisins,	383
Still, cold, described,	393
its uses,	394
Single goods, what,	410
Still, cold, the operation of it how performed,	377
Stock of ferments, how procured,	351

Subject, fermentable, what composed of,	Page 347
Sugar spirit, what, and how extracted,	383
Sulphur, oil of, its uses,	353
Tartar, an aqueous solution of, its uses,	352
Theory of fermentation,	348
Wash, what so called by the distillers,	346
Water, what fittest for brewing,	345
Water, why necessary in several distillations,	379
Waters, simple, what	402
how distilled,	393
drawn from fermented plants,	401
from balm,	406
from cinnamon,	404
from dill seed,	408
from fennel seed,	405
from Jamaica pepper,	407
from orange peel,	408
from pennyroyal,	407
from peppermint,	405
Vapour Bath, advantages of distillation from,	372
Waters from roses,	403
from spearmint,	406
Water, from angelica,	418
spirituous, from aniseeds,	414
from balm,	406
from briony root,	422
from camomile flowers,	420
from caraway seed,	415
from cardamom seed,	416
from cinnamon,	409
from cloves,	410
from citron peel,	414
from four seeds,	426
from four spices,	425
from lavender,	413
Water, lemon peel,	412
from nutmegs,	421
from orange peel,	419
from parsley,	424
from pennyroyal,	424
from peppermint,	417
from wormwood,	419
Wormwood water, lesser composition,	419
Wormwood water, greater composition,	419













